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ABSTRACT

The document offers guidelines for developing a management by information system for special education services, a system that organizes people, equipment, procedures, and communications to collect and present accurate data that administrators can use to make decisions and to provide information to state and federal governments. Following a definition of management by information and its benefits are sections which explain how to design, implement, and operate a management by information system. Based on the experiences of managers in five state and five local education agencies, the booklet uses specific examples to develop a step by step process for the system's four phases: assessment, planning, testing, and implementation and operation. Pitfalls of the system are briefly delineated. Appendixes contain brief summaries of the systems at each of the state and local education agencies that Management Analysis Center personnel visited, a list of questions for determining possible external constraints that may affect system development, and an outline of data elements. (SBH)

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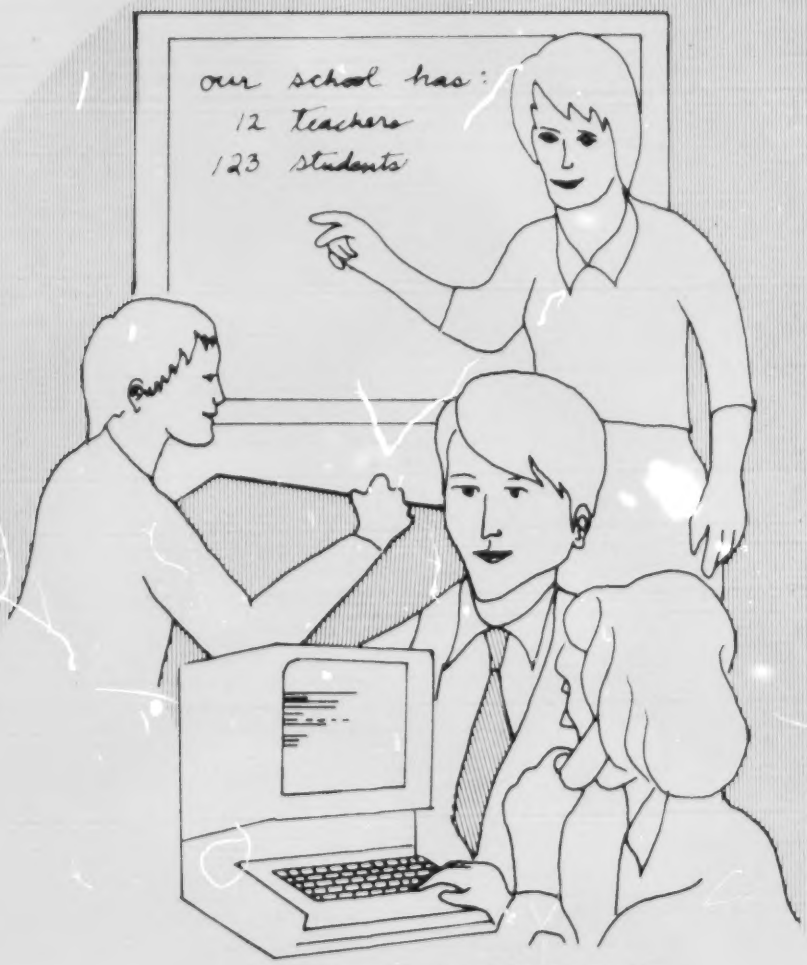
SPECIAL EDUCATION

Management-by-Information



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SPECIAL EDUCATION

MANAGEMENT-BY-INFORMATION:

A RESOURCE GUIDE

for State and Local Education Agencies

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Contents

Acknowledgments	v
Preface	vii
Introduction	ix
Key Factors	1
Steps in the Development of a Special Education Management-by-Information System	3
Phase I - Assessment	
Step 1 - Define the Goals of an Ideal System	5
Step 2 - Determine Current Capabilities	8
Step 3 - Determine Desired Capabilities	11
Step 4 - Assess Environment	16
Phase II - Planning	
Step 5 - Decide on a Modified System or an Entirely New System	22
Step 6 - Design System	23
Phase III - Testing	
Step 7 - Train Data Providers and Users	33
Step 8 - Pilot the System	33
Step 9 - Revise Original Design	34
Phase IV - Implementation and Operation	
Step 10 - Implement the System in the Rest of the SEA or LEA	36
Step 11 - Monitor and Provide Continued Support	36
Step 12 - Evaluate and Revise System	38
Pitfalls	39
Appendix A	43
Appendix B	62
Appendix C	64
Appendix D	65

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Scott L. Parker
Senior Vice-President
Management Analysis Center, Inc.

PREFACE

As the delivery of special education services has become more complex and as federal and state reporting requirements have increased, the management and information needs of special education administrators have significantly expanded. This guide is a response to the need for a "management-by-information system" -- a system that organizes people, equipment, procedures, and communications to collect and present accurate data that administrators can use to make decisions and to provide information to state and federal governments. As this definition of a "system" indicates, we are addressing more than just the procedures for data collection and reporting. We are concerned with a management-by-information system that considers the total means of satisfying managers' needs for information.

The manual has two purposes: (1) to define management-by-information and its benefits and (2) to explain how to design, implement, and operate a management-by-information system. It is based on the actual experiences of managers in five state and five local education agencies. We have used specific examples of their experiences to develop a step-by-step process that other administrators can use to assess their existing systems and modify a present system or design a new one. We have also included as Appendix D a list of specific data elements that most special education systems require. The list may further assist managers to define their own needs.

The special education administrators in the states and school districts that we visited found that, once they began to develop a system, what initially appeared to be an impossible task became manageable. They found it possible to develop a useful information system with little technical expertise and a minimum of incremental funding. Several of the ten systems were designed totally by special education staff with little or no special funding.

Many of these states and districts review their information systems regularly. This process results in systems that undergo continuous evolution. The descriptions in the guide represent the systems as of September, 1979.

INTRODUCTION

A management-by-information system must be based primarily on the information that special educators need for decision-making and only secondarily on reporting requirements. Based on the premise that effective managers need accurate information to make sound decisions, Management Analysis Center, Inc., in cooperation with the National Association of State Directors of Special Education, developed this guide to management-by-information. It is about the management of special education programs using information as a critical tool.

BACKGROUND

The most casual observer would note a dramatic increase in the level and scope of education provided to handicapped children over the last ten years. That same observer would also note the increase in legislative, judicial, and administrative activity in the field.

The number of children being provided with special education services has increased significantly, and at the same time the scope of those services has broadened to encompass the varying needs of individual children. The broadened level of services has required more and more varied resources and has resulted in requests for more information from special education service providers. All of these circumstances have placed a rapidly increasing and more complicated responsibility on teachers, aides, and administrators.

These changes have subtly but distinctly changed the role of special education administrators. Where educational program consulting previously dominated the role, broad program management is now required. Administrators need good management tools and accurate information not only to meet reporting requirements, but also, and more importantly, to ensure that all handicapped children receive the services they need.

This guide was created to assist state and district special education administrators in developing a management-by-information system. The authors reviewed several recently developed information systems and learned about their benefits. A good management-by-information system:

- provides increased knowledge about programs at a time when special education administrators are increasingly removed from daily operations;
- identifies problem areas where technical assistance may be needed;
- communicates problems and needs to districts, to state officials, to legislatures, and to the public;
- assists administrators in complying with new and revised state and federal laws and regulations;
- meets reporting requirements effectively.

A good management system can help special education administrators with all aspects of service delivery management and will enable the administrator to be more informed and effective. Improvement in the management of service delivery will then ultimately benefit teachers, parents, and, most importantly, students.

SITE VISITS

Site visits to state education agencies (SEAs) and local education agencies (LEAs) were the source of much of the information in this guide. These SEAs and LEAs represent a broad range of administrative needs and management-by-information systems rather than SEAs or LEAs with "model" systems. The systems range from small to large and from relatively simple to complex. Each site visit included a review of:

- o the organization of the SEA or LEA administrative and service delivery structure;
- o the personnel and computer requirements of the information system;
- o the information collected and reported;
- o the procedures used to collect, process, and report information;
- o management's use of the information system;
- o the strengths and weaknesses of the system;
- o potential improvements and replicability.

The following paragraphs briefly describe the SEAs and LEAs visited; Appendix A contains a more detailed description of each system.

State Education Agencies

The five SEAs are Colorado, Florida, Montana, New Hampshire, and South Carolina. The range in their demographics is shown below.

	Number of LEAs	Approximate Number of Handicapped Students	Number of Special Education Staff*
Colorado	181	57,000	17
Florida	65	165,000**	21
Montana	11	12,000	5
New Hampshire	168	10,000	6
South Carolina	92	83,000	17

* Special education staff included in this count are non-clerical staff located in the state department of education who have responsibility for state special education programs.

** This count for Florida represents a duplicated count of handicapped students.

The systems range from a continuously updated child-based system (New Hampshire) to a centralized, integrated special and general education system (Florida).

- **New Hampshire** - SEA administrators developed automated child-based information systems in the last two years. For each student, information is available on placement, individualized education program (IEP), and costs. It is continuously updated throughout the year.

- **Montana** - SEA administrators are phasing in an automated system. Data about children are collected by program unit (teacher) yearly and processed by computer. Data about personnel and finances are still processed manually.

- **South Carolina** - The SEA has an automated system for data required for state funding and a manual system for data required for the federal government. All data are collected in aggregate form by district. A manual referral monitoring system tracks child placement.

- **Colorado** - Districts submit data for each student or in aggregate form. The automated system also includes financial and personnel data.

- **Florida** - The state legislature has mandated a centralized state-funded information system that integrates general and special education data. Student, personnel, facility, and cost data are grouped by school in program categories.

Local Education Agencies

The local school districts represent a variety of sizes and approaches to information systems.

	Number of Educational Facilities	Approximate Number of Handicapped Students
Anne Arundel County, MD	113	9,500
Brevard County, FL	62	5,000
Colorado Springs, CO	53	4,000
Great Falls, MT	28	1,100
Houston, TX	232	22,000

All five management-by-information systems were at least partially automated. Houston, Brevard County, and Anne Arundel County LEA administrators integrate special education data with general education data; Great Falls and Colorado Springs administrators use independent special education information systems.

- **Houston** - Data about special education students are processed and reported with data about general education students. Information systems for in-service training and materials purchases and deliveries are separate.

- **Brevard County** - Special education financial and personnel data are integrated with general education data. Student data, including demographics, placement, and test score data, comprise an almost independent information system used mainly for management purposes.

- **Anne Arundel County** - Data about children are maintained as a subsystem of the general education information system. The information available is useful to managers and satisfies all state reporting needs.

- **Great Falls** - The main purpose of the management-by-information system is to assist teachers and district staff in monitoring student progress toward goals of the individualized education programs. The information provided also fulfills state reporting needs.

- **Colorado Springs** - LEA administrators fulfill state reporting requests by sending in data tapes with the required information. The data tapes have almost totally eliminated the need for managers to complete report forms. Data collection is fully integrated with normal referral and staffing procedures; the Staffing Report Form is also the data collection form for computerized data.

GUIDE CONTENTS

The remainder of this guide discusses the critical factors in the development of a management-by-information system and the four main phases in the development process (assessment, planning, testing, and implementation and operation). Where appropriate, the discussion includes illustrations from the SEAs and LEAs visited. The guide concludes with some of the potential pitfalls of the management-by-information system development process.

KEY FACTORS IN THE DEVELOPMENT OF A SPECIAL EDUCATION MANAGEMENT-BY-INFORMATION SYSTEM

The processes and procedures involved in the development of a special education management-by-information system are critical to the ultimate success of the system. System designers should give a great deal of consideration to the impact of the system on special education personnel. Managers will embrace a system only if it satisfies their needs without imposing an excessive burden on them.

In order to ensure the enthusiastic cooperation of managers, system designers should follow seven key procedures.

DEFINE MANAGERS' NEEDS FIRST

Managers' information needs should determine the design of the system. Involving information users in the development of the system and integrating the information system with existing management processes can help to ensure responsiveness to managers' needs. Developing computer programs after managers' information needs are clearly defined will help to prevent computer technology from dominating the design of the system.

INVOLVE DATA PROVIDERS IN SYSTEM DEVELOPMENT

Data providers are much more likely to submit accurate and timely data if they view the system as responsive to their needs. Information needs of data providers will be considered if data providers are involved in system design. At the same time, they will recognize that they are receiving benefits for their efforts.

MINIMIZE DUPLICATION IN DATA COLLECTION

The ultimate objective should be to require data providers to supply each item of information only once to reduce the burden on their time and to minimize the chance for errors. Duplication can be minimized in several ways. Information already in the general education data bank can be used for the special education system. Universities or service agencies may have information special education managers need. Cross-referencing several sources of information can provide many different reports from a few unique pieces of data.

DESIGN SIMPLE DATA COLLECTION FORMS AND REPORTS

Data collection forms that are easy to complete make accurate and timely submission of data more likely. Managers will more likely use information provided by the system if it is presented in an understandable report. Therefore, data collection forms should be as self-explanatory as possible, and system reports should be easy to understand.

PILOT THE SYSTEM

A pilot test of the system in one part of the SEA or LEA can bring out problems and needs experienced in actual use of the system. Changes can then be made more easily before full scale implementation takes place.

PHASE IN IMPLEMENTATION

Phasing in implementation allows data providers and users to adjust gradually to the system, and the system can be revised more easily. For example, data collection, processing, and reporting for students could be implemented before data about personnel and finances. By phasing in the system, managers also begin to receive information from the system at an earlier time.

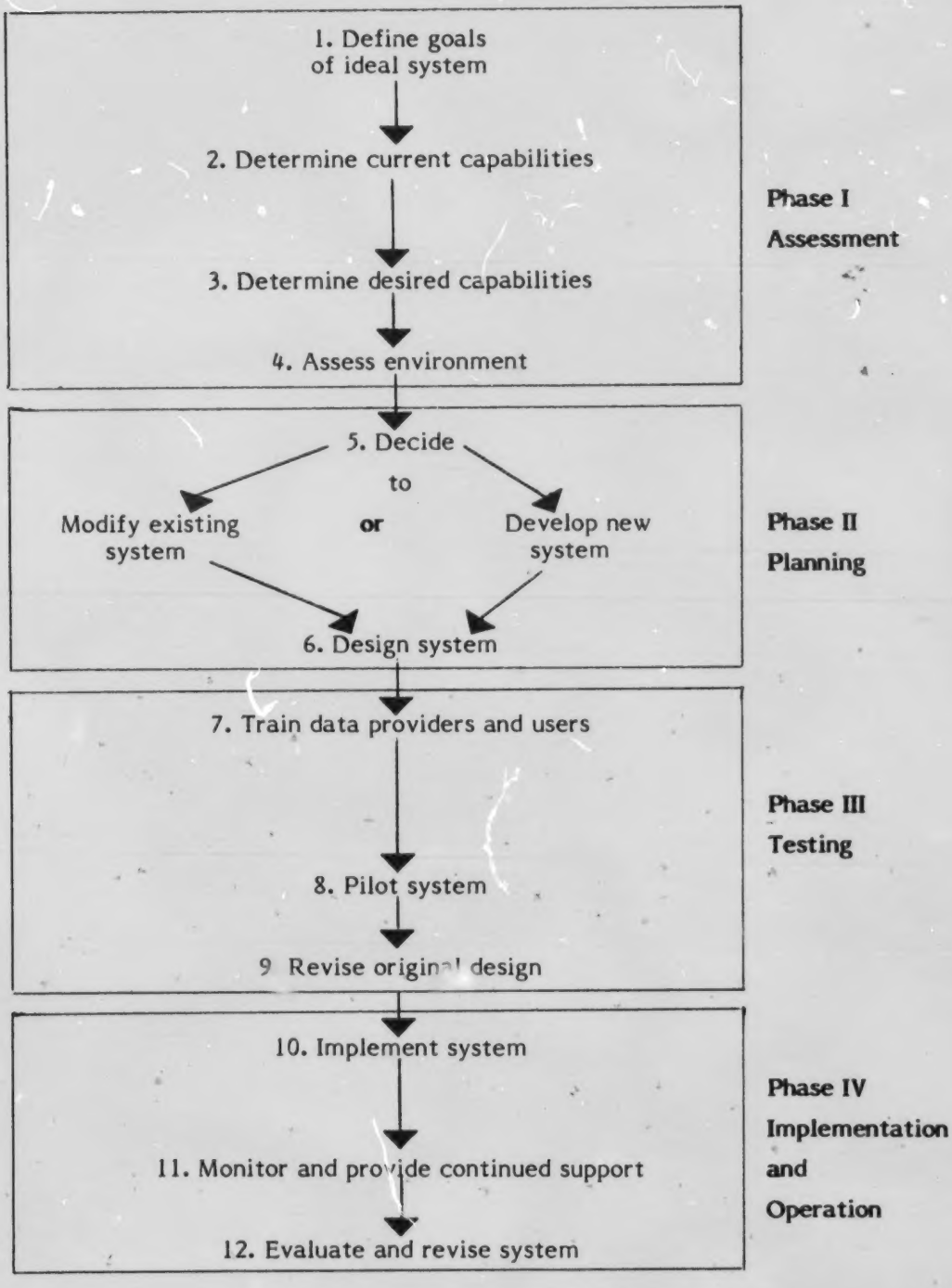
BUILD A FLEXIBLE SYSTEM

The needs of special education administrators and managers will change over time. Changes may be as broad as new regulations or as specific as adding the names of a child's siblings. System designers should expect that some changes will be necessary. Procedures for identifying and implementing desired adjustments on an on-going basis should be an integral part of the total system.

STEPS IN THE DEVELOPMENT OF A SPECIAL EDUCATION MANAGEMENT-BY-INFORMATION SYSTEM

A special education management-by-information system is developed in four phases - assessment, planning, testing, and implementation and operation. Each phase comprises several steps.

Steps in the Development of a Special Education Management-by-Information System



PHASE I - ASSESSMENT

The first phase in developing a management-by-information system is to assess the existing system and the environment in which a new system would be developed. System developers determine their information needs in light of an ideal system and compare them to information currently available.

Steps 1 through 3 do not necessarily occur in the order they are presented. They may be performed simultaneously.

Step 1 - Define the Goals of an Ideal System

While an ideal system often is not possible, it is useful to think about what purposes an "ideal" system should serve. Managers can then compare the existing system with the ideal and determine how great a disparity exists.

The most important objective of a management-by-information system is to supply the information managers need to make decisions. Only managers themselves can define the information needs that will be specific to their situations. Defining needs is difficult. A good approach to this step is for managers to begin by considering the decisions which they make and the tasks which they perform. Once managers specify the decisions and tasks, they can identify the information that would be most useful. This approach helps managers focus on the ultimate use of the data rather than on the identification of every possible data element.

Managers of LEAs need information about the delivery of services, about children in the system, and about resources. The information system can help managers decide whether children have been placed in the least restrictive environment, what resources are needed, and how they should be allocated.

> The Colorado Springs system lists all special education students in the district by class. Managers use this information to determine the average teacher-student load, and to find which classes have significantly more or fewer students than average and why. In some cases, students are relocated so that class size becomes closer to average.
>
> In Brevard County, managers project the subsequent year's special education student population according to handicapping condition by applying equations to the current year's population. The computer projects needed staff based on the projected population and matches staff needed to current personnel. Unfilled positions are listed in a computer report. District managers can then decide whether to hire new personnel for empty positions and whether to terminate personnel filling unnecessary positions.

DEFINE GOALS OF IDEAL SYSTEM

Managers of SEAs need information to monitor LEA funding and service delivery. The information should help SEA managers make decisions about the allocation of state funds, ensure that LEAs are providing services in accordance with state and federal laws and regulations, and identify the need for technical assistance from the SEA staff. SEA managers also need information to support requests to the legislature for programs and funding--LEA special education expenditures, current and projected numbers of students, programs offered, and numbers of personnel by handicapping condition taught.

> Special education has become an increasingly visible area in Montana. In 1979, the legislature responded to this attention. The legislators considered whether to change the 100% state funded system and require the local districts to assume some of the costs. Legislators looked to the Division of Special Education as a primary source of data. The Director of Special Education used the newly developed information system to supply accurate data on questions such as the number of children served, the number of staff, and services offered. Special education remained 100% state funded.

An ideal system helps LEA and SEA managers meet reporting requirements by providing information needed to complete reporting forms. One LEA provides information to the state on computer tape, thereby eliminating the need for local managers to complete many of the required reporting forms. A system whose only function is to meet reporting requirements, however, is not a management-by-information system; it does not provide information useful to managers.

An ideal system can also provide feedback to the people who provide the data. An SEA system can produce information that district managers can use. An LEA system can produce information that principals and teachers can use. This objective has two desirable benefits. First, data providers receive a return for their efforts. They are more positive about providing accurate data if they receive useful information in return.

> During the early development phase in the New Hampshire SEA, district personnel expressed concern about a centralized computer system. Districts questioned how accurate the system would be and worried about the loss of district autonomy. As districts began to receive information from the system, support grew. Because they used the output of the system, district personnel also became careful to provide accurate input data.

Second, the SEA or LEA system can provide information to help data providers make decisions about service delivery.

In Great Falls, teachers prepare a monthly report for each student that indicates progress toward the goal established in the IEP. The computer prints a report for each child showing all the monthly scores for each program goal and projects the date for achieving each goal given the current rate of progress. Teachers can then decide whether teaching methods are successful and, if not, how they can be improved. The system also produces a summary that compares the progress of all children in a class. Teachers can identify students who may need special help.

Step 2 - Determine Current Capabilities

In evaluating the existing system, it is helpful to consider the adequacy of the system from several viewpoints -- for example, usefulness, quality, timing, and the need for automation. Appendix B is a checklist that focuses more specifically on these aspects.

Usefulness

An existing system may not be useful to data providers for several reasons. For example, it may not provide enough information.

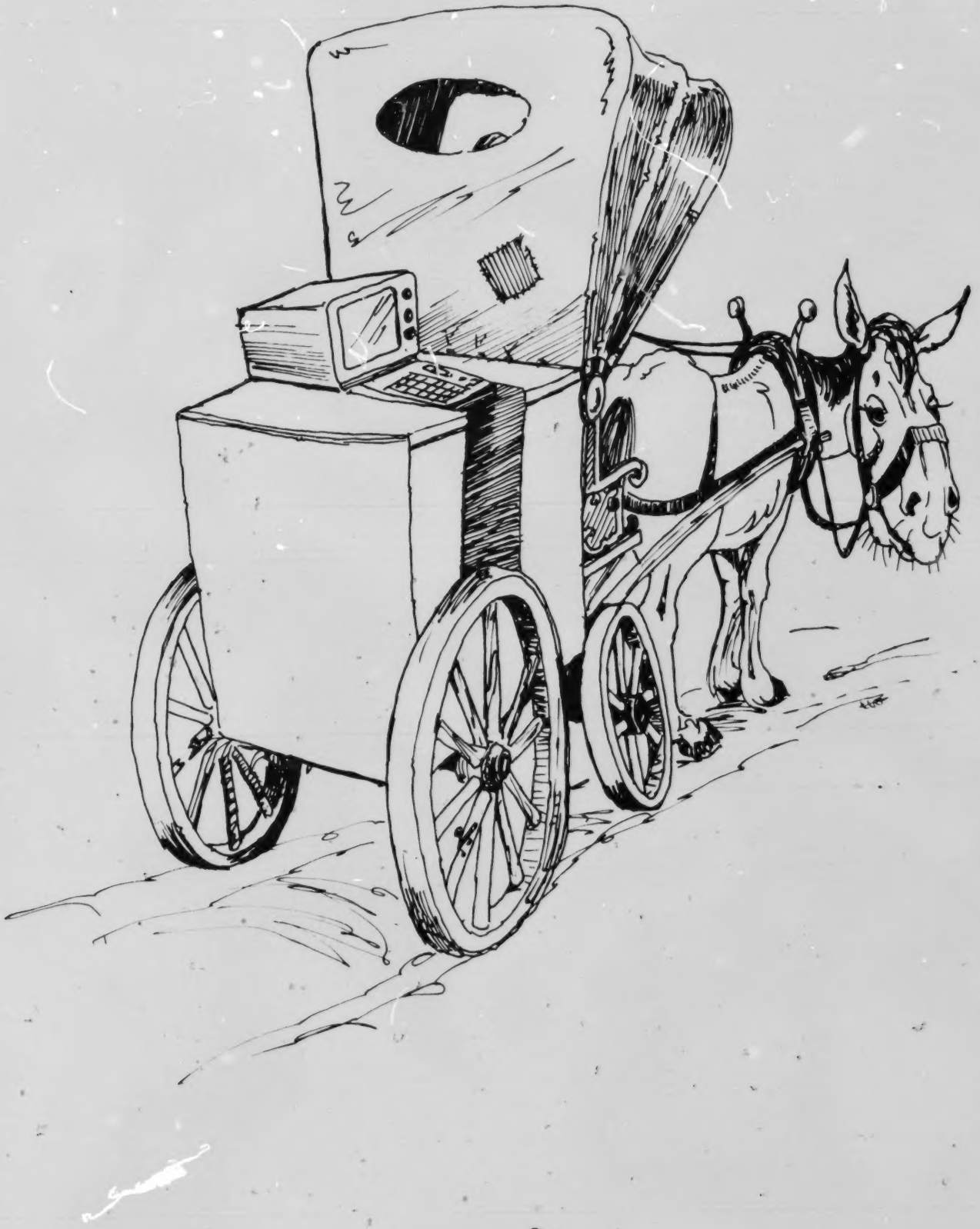
The biennial budgeting process in the New Hampshire SEA was becoming a difficult period marked by numerous questions from the legislature and attempted answers from the SEA. Mutual frustration was developing. The new special education information system helped change the situation. Managers began to submit better justification for their budget request and could respond more quickly when asked for additional data. The legislators came to trust the special education data. A spirit of greater cooperation and confidence emerged.

On the other hand, a system may provide a large amount of information managers do not use. Several factors may cause this situation. Managers' information needs may not have been taken into account when the system was developed. Managers' information needs may have changed while the information system has not. Or, system designers may have tried to include every imaginable piece of data rather than data identified by careful consideration of management tasks and responsibilities. A system useful to managers provides information which is used by managers as a basis upon which to make decisions.

Quality

As programs grow, personal contact with service providers may decrease. Good methods for ensuring accurate information become increasingly important. Managers often have mixed feelings about establishing procedures to ensure data accuracy. On the one hand, managers can trust only the information they know is accurate. On the other hand, procedures to determine that data are accurate can take a great deal of time. However, without these procedures, information cannot be a basis for management decisions.

DETERMINE CURRENT CAPABILITIES



> In Colorado Springs, before a computerized system was developed, teachers compiled lists of the district's handicapped students annually. The manual system had no mechanism for keeping track of the large number of transient students (as high as 80 percent in some schools), so totals created from the student lists were often inaccurate. As a result, LEA managers could not use the data provided.

Some managers fear that checking data will destroy established relationships based on trust. In fact, most managers who submit data welcome reliable checks. Good procedures also help them to maintain accurate data. Relationships are simplified because everyone has confidence in the data.

Timing

Even though a system may supply accurate information useful to managers, it may not supply the information when managers need it. Both the submission of data and the tabulation of data may cause problems in timing. Data providers may resent a system that places heavy demands on them. They are likely to delay submitting the data. Attempts to minimize the perceived burden often result in rush jobs that require additional time for corrections and changes.

The time required for data tabulation can also affect both the timeliness of the data and the costs of the system. The costs of a burdensome system can outweigh its benefits.

If data providers resent the system for the time it requires of them, they are unlikely to support or use it.

Automation

Whether the system should be automated is another consideration in evaluating it. A manual system may be sufficient when quantities of data collected and tabulated are small, but even minimal use of a computer can result in several benefits. A computer simplifies calculations as well as accessing and sorting data. It also enables the automatic receipt of needed information.

> In the Brevard County LEA, teachers used to compile class lists manually, which took two weeks. The new computerized management-by-information system automatically generates class lists using data entered by a clerk typist in the special education department.

An automated system usually provides information more quickly than a manual system. Even if the existing system is computerized, it may be that data processing could be made more efficient or that additional information could be computerized.

Step 3 - Determine Desired Capabilities

Determining the current capabilities of the SEA or LEA system should suggest what the system lacks. The next step in designing a useful system is to determine the desired capabilities of a management-by-information system. These considerations should define both the information that the system would produce and the operating characteristics, such as the extent of automation and turnaround time.

Information Produced by the System

In order to determine the information the system would generate, managers should consider the three major objectives of a system:

(1) to satisfy managers' information needs,
(2) to meet reporting requirements,
(3) to provide useful information to data providers.

Each of these major objectives includes more specific uses and users of information.

Managers' Information Needs. SEA managers need information that can help them plan and budget programs. For example, if they know how many children are anticipated to be in various programs, SEA managers can more accurately prepare the following year's budget. Based on projections of student population, SEA managers can develop long-term personnel plans that help direct the flow of teachers emerging from the state's colleges.

SEA managers also need information they can use to improve the quality of special education programs. Managers can identify particularly good practices which others might adapt. They can also locate less successful programs to which they can give additional support. Information about programs and students can highlight areas needing more technical assistance and can help ensure that LEA programs meet state and federal requirements.

> Florida collects student, personnel, and cost data by program. These data, supplemented by monitoring visits and frequent contact with districts, allow the state to identify and correct problems. Publishing district-by-district comparisons encourages districts to improve their programs.

SEA managers also need information about program costs to reimburse LEAs.

> In Colorado, LEAs report special education costs to the SEA in ten different categories. The SEA system summarizes the financial data and calculates LEA costs reimbursable by state funding.

DETERMINE DESIRED CAPABILITIES

EFFICIENT, TIMELY DATA RETRIEVAL

LEA managers need information to manage service delivery at the local level, including planning and budgeting programs.

> LEA special education managers in Houston use a computer print-out that lists students by handicapping condition to plan for the next year's programs and budget.

LEA program managers may need test scores to assess the effectiveness of special education programs.

> The information system for the Exceptional Education Division in the Brevard County LEA will eventually record and keep track of all test scores for exceptional students. Managers will be able to compare and evaluate the effectiveness of various teaching methods.

> In Great Falls, the system produces a print-out that compares progress toward IEP goals of all students in a class. LEA managers can also compare rates of progress for different classes. With these system aids, special education coordinators can locate teachers whose classes are progressing more slowly than others and decide what actions to take to assist those teachers.

Reporting Requirements. State laws and regulations impose information needs on SEA managers.

> In Colorado, the Handicapped Children's Educational Act requires the state special education department to submit to the legislature an annual report containing four key statistics: (1) for each handicapping condition, the number of children served, (2) for each handicapping condition, the number of children not served, (3) the educational services provided to children served and (4) the total costs incurred for those services.

With increasing government and public interest in special education, state legislatures are demanding various kinds of special education information that may or may not be required by law and regulation. To develop a list of potentially needed information, managers must consider historical demands as well as anticipate future demands.

> In Colorado, the state legislature's Joint Budget Committee requests special education data each year. Although it is impossible to predict exactly what information the committee will request, system designers developed a list of likely requests. Each year the list is revised to reflect current concerns.

New Hampshire designed its system with legislative needs specifically in mind. The legislature frequently requests special reports. The SEA needed a system to provide up-to-date reports within one or two days. This need became one of the criteria for the system now in place.

The federal government's need for information about special education has increased as a result of the passage of federal laws like P.L. 94-142 and P.L. 89-313. Some of the information the federal government currently requests includes numbers of handicapped students by age, disability, and program in which they are placed; number of teachers and salary costs; and transportation units. Federal requirements need to be incorporated in the system design.

SEA and LEA information systems are a major source of information about special education for other service delivery agencies, educational institutions, and the public. Students preparing papers or theses on special education may have questions about numbers of students; the public may have questions about special education services and costs. Although such requests are difficult to anticipate, historical requests can serve as a guideline for developing a list of needed information.

Information to Data Providers. SEA managers should consider designing a system that LEAs can use. The most effective system would be a flexible one that can produce information in response to a request from an LEA.

The New Hampshire SEA offers forty standard reports to districts, but it also provides special reports to LEAs on request. The computer system includes a special report writer package that can create new reports from the main data base. This feature allows LEAs to decide for themselves the kinds of reports they would like to receive from the SEA system.

The SEA system can serve as a collection and dissemination center for information about programs and procedures used by LEAs. The SEA system can also provide a comparison of LEA statistics to highlight differences from the average. Statewide and historical trends then form a basis for LEA management decisions.

Using information supplied by LEAs, the Florida education information system produces computerized cost analysis reports, which are distributed to LEA managers. The reports show program costs for any district or any school in Florida as percentages of Florida Educational Finance Program revenues, as percentages of total program costs, or compared with the previous year's program costs. In Brevard County, managers use some of the reports to compare their program with those in other counties. The comparative data allows them to identify more cost efficient programs, which they can use as models to modify their own programs.

Teachers and principals can use information provided by the LEA and SEA to improve special education programs.

> In the Great Falls LEA, teachers receive a monthly progress report for each of their students. The report is a computer print-out of the students' scores on monthly tests that are designed to measure progress toward IEP goals. The report allows teachers to evaluate the effectiveness of teaching methods for individual students. It also allows them to know when a student has reached an IEP goal so that they can develop new goals. By simplifying the print-out, teachers can provide a measure of students' achievements or failures for parents and students.

Characteristics of the System

To determine the characteristics of a system that would provide the necessary information, designers should consider whether the system should be automated, its capacity and flexibility, and how quickly it should produce information in response to special requests.

Automation. Efficiency determines whether or not to automate. If an LEA or SEA has few handicapped students and needs little special education information, the ideal system might be manual. If the district is large and much information is collected and tabulated, an automated system may be most efficient. Computers can be very simple or highly sophisticated. Most management-by-information systems can be enhanced by the use of computer equipment, but it is not always necessary.

Capacity and Flexibility. The management-by-information system must include methods for storing the necessary data. Storage needs will increase over time.

Information needs will determine how flexible the system should be. While most information is routine, some will be needed to respond to special requests. The system should provide a few standard reports that contain information that managers use regularly. The system should also have the ability to provide specially requested reports to satisfy unusual and non-routine data requirements.

> In Brevard County, the LEA management-by-information system includes a software package that can extract information from existing files to produce one-time reports. The package allows rapid response to most requests.

Turnaround Time. Another important characteristic of a system is the time it takes to produce information. Quick response to information requests can be extremely valuable.

The fast turnaround from the system in the Colorado Springs LEA has both greatly reduced the reporting burden on the managers and increased the accuracy of reported data. The system can produce reports within 24 hours. Data in the system is kept current at all times. Because of these two features, no special effort is necessary for reports. Managers only need to submit a request to the system 24 hours before they want the report.

Step 4 - Assess Environment

Factors external to special education can both help and hinder the development of an ideal system. Before a system can be designed, managers must assess the environment that will affect its development--the amount of support from upper management and users, the availability of funds and computer technology, the capability of those who supply and use information, and the size and structure of the SEA or LEA. Where the environment presents potentially significant constraints, an LEA or SEA may wish to resolve these issues before completing step 3. Appendix C provides a checklist to help assess the environment.

Amount of Support

The support of upper level district or state education administrators is important to the development of a special education information system. Even if special education managers commit themselves to the development of a system, lack of support from superiors can make the task difficult. Support of the special education information system is essential because developing a new system requires a great deal of time; it cannot occur if staff and management are not made available.

A change in the district management interrupted development of the special education management-by-information system in Brevard County. Work on the system resumed only when new managers renewed the commitment to it. The personnel designing the system found that they needed the active involvement of upper management.

The Anne Arundel County LEA recognized the need for a management-by-information system several years before it began to design one. Until a new Director of Special Education provided active support and participation, however, no progress had been made. Because of the enthusiasm of the new Director for the system, county executives made available the necessary data processing staff.

Availability of Funds

Some LEA and SEA managers have found that additional funds are unnecessary for system development because a system can be entirely developed by reallocating existing resources.

ASSESS ENVIRONMENT

In the Anne Arundel County LEA, LEA special education and data processing staff designed and implemented the system. The cost for development was for existing personnel time rather than for out-of-pocket expenditures or for incremental, nonbudgeted items. The only additional cost was the cost of printing the data collection forms.

Development of a system may involve some significant costs other than personnel time. Many sources of funding are possible, but the trade-off between additional costs and expected benefits should be evaluated before sources of funding are explored.

The Great Falls LEA special education information system was developed under contract by two researchers at the University of Washington. The district funded most of the development with its own funds, and the Evaluation Studies Project, a research program at the Experimental Education Unit of the University funded by BEH, provided partial support.

The Florida SEA has a fund to support LEAs that are developing information systems. The money can be used for software, hardware, and staff time.

Availability of Computer Technology

Availability of computer technology is another consideration. Some SEAs and LEAs own a computer. In other cases, an SEA or LEA may locate a computer that they can share.

Special education managers in Colorado Springs found that the school district and the El Paso County offices share a computer, which was available for special education data. District data processing staff assist special education managers with system development and operation.

Texas has twenty Regional Service Centers, which have staff and equipment to provide computer services to school districts. Houston LEA special education managers worked with Region 4 Service Center staff to develop a computerized special education system. Some special education data are processed by the Region 4 computer; other data are processed by the district's computer.

The capabilities of available computers can affect system development. Storage capacity, the ability to cross-reference files, flexibility in report production, and turnaround time are all factors that affect the kind of system that can be developed.

The computer that Colorado Springs used already had on-line retrieval capability. As a result, Colorado Springs was able to develop and implement an interactive system for special education. If the on-line capability had not already existed, Colorado Springs would have had to choose between a simpler, "batch mode" system or considerably higher development costs.

Staff Capabilities

The type and amount of data that a special education management-by-information system requires can also affect system development. LEA managers are expected to provide data for SEA systems; teachers, principals, and other LEA staff are expected to provide data for LEA systems. Managers may be able to minimize the time required of those who supply data by using alternative resources.

The Brevard County LEA hired a clerk typist to extract data from existing student files to complete data collection forms rather than require teachers to complete forms. This procedure minimizes duplication of effort because the student files contain information previously provided by school staff -- psychological reports, test records, and screening information.

In the Anne Arundel County LEA, completion of the data collection forms has become part of the agency's annual review. At the end of each annual review, one person on the pupil placement team completes the form.

Some special education staff may hesitate to accept new procedures, technology, and reports that are part of an information system. One way to overcome this hesitation is to involve the staff in the system's development. In several SEAs and LEAs, managers responsible for system development taught staff members about the new system and its procedures. The most important part of familiarizing staff with the system is communicating the potential benefits of the system for them; they will then be more likely to support its development.

Managers also must ensure that those who provide information are committed to providing accurate information. All data providers should be trained in correct data collection and reporting procedures. Managers can use incentives or penalties at their disposal to ensure accuracy.

The state of Florida mandated the "development and implementation of an integrated information system for public school educational management." This mandate spurred the development of accurate LEA systems by tying the allocation of state funding to the submission of accurate data. The state can assess funding penalties against an LEA that does not supply accurate data.

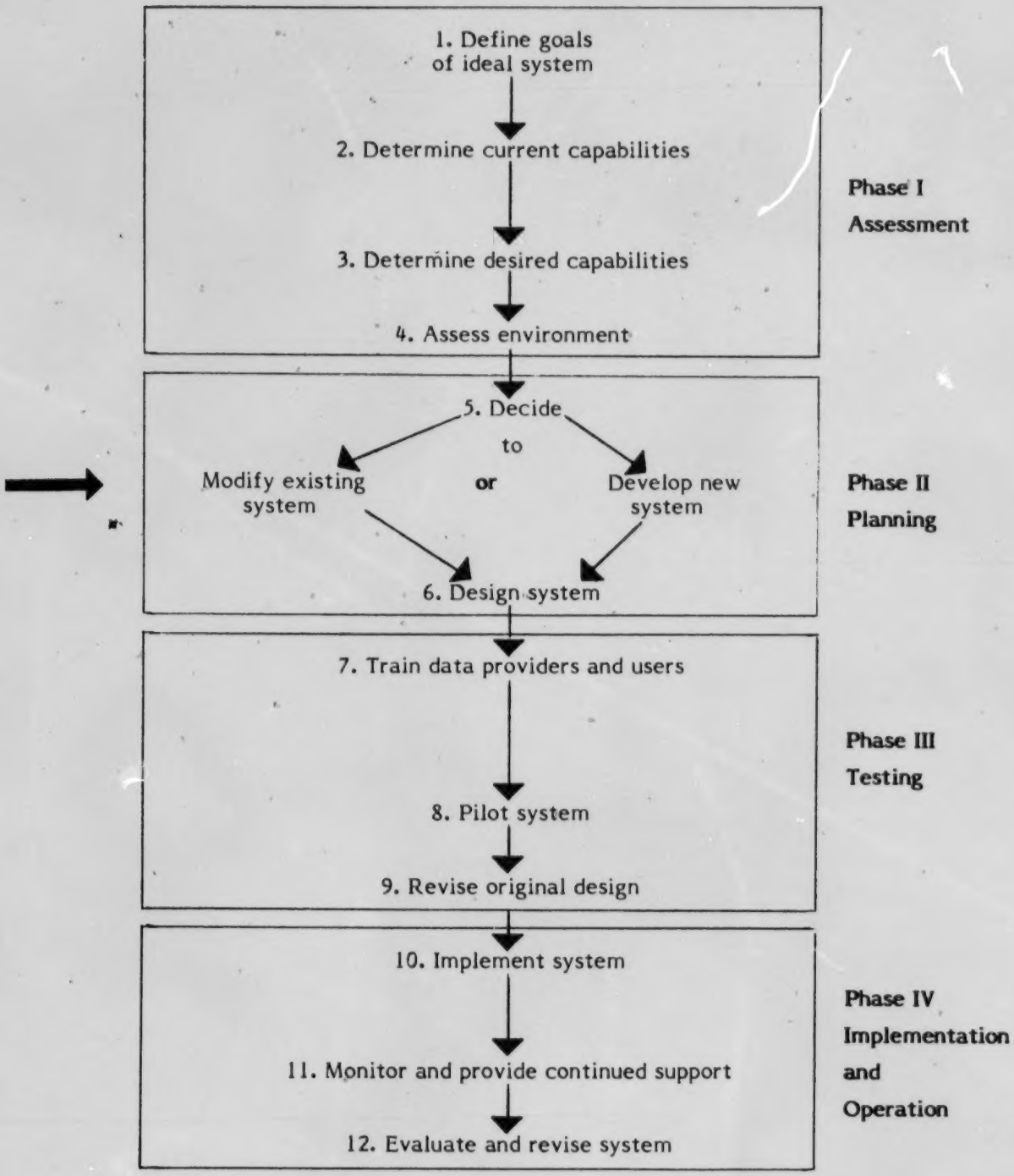
Size and Structure of the Agency

The size and structure of an SEA or LEA can also affect the development of an information system. SEAs and LEAs may not have the staff or other resources required for development. On the other hand, small size can be an advantage.

> New Hampshire SEA managers found the small size of the SEA to be helpful to system development. Because the SEA has so few special education managers, a large proportion of them were involved in the system's development. As a result, the system takes into account managers' needs, which helped to develop support for the system.

In large SEAs and LEAs, development may be complicated by the large number of people and amount of information involved. The development team should be careful to involve representatives from all groups that will provide or use data. A large SEA or LEA should identify representatives from each type of group at the beginning of the system design. For instance, an LEA might include representatives from groups such as special education consultants, resource teachers, itinerant teachers, secondary school principals, elementary school principals, and psychologists. Periodic, scheduled meetings would be held to review the design. Although a large SEA or LEA may need a more formal and detailed schedule than a smaller SEA or LEA, the involvement of a broad range of people is very advantageous. The development team is able to draw on people with expertise in many areas.

Steps in the Development of a Special Education Management-by-Information System



PHASE II - PLANNING

Step 5 - Decide to Modify Existing System or Develop an Entirely New System

Although the decision as to whether to modify the existing system or develop an entirely new one is based primarily on needs, it must be partially based on environmental constraints. When considering this issue, managers should focus on three areas and should have written lists for each:

(1) System inadequacies: The first list should be the major inadequacies of the existing system. If step 2 has resulted in a long list of system inadequacies, there may be no reason to retain any portion of the existing system.

(2) System needs: The second list should summarize the major needs of a management-by-information system.

(3) External constraints: The third list should be the major external constraints to system development.

Deciding how to develop a new system should be a process of weighing the three lists against each other. While a long list of major system inadequacies and needs would suggest development of an entirely new system, a long list of development constraints might suggest modification of the existing system. The key to this step is to summarize the most important factors that would affect a decision in one way or another.

One overriding reason for the decision to develop an entirely new system may be that virtually no system exists.

> Before 1976, special education managers in the Montana SEA collected virtually no data. Requests for information from the state and federal governments spurred the development of an entirely new information system.

Another overriding reason for development of an entirely new system may be new system needs.

> Great Falls implemented precision teaching throughout the LEA. Precision teaching is a method of planning for and monitoring student achievement. In 1978, Great Falls began development of a new information system to support precision teaching. The primary objective of the system was to track student progress toward IEP goals as determined by the precision teaching method.

In one SEA, managers found that because an existing system had been serving some needs, a new system could incorporate some aspects of the old one.

In the Colorado SEA, managers have collected data on special education services for the last fifteen years. Until 1973, all information was collected and compiled manually and was used mainly to calculate total program costs. The current computerized system is based on that system. Special education managers have developed a systematic process to collect data and generate reports. Automating the system allowed managers to spend more time analyzing the information and providing assistance to LEAs.

Step 6 - Design System

Once the decision has been made to modify an existing system or design a new one, system design can begin. Before it does, however, it is helpful to develop some basic design concepts. It is also important to determine responsibility and scheduling for the design process. It is more likely that the system design will be achieved if one or several people are directly responsible for completion within a specified time.

Develop Basic Design Concepts

The basic system design concept broadly defines how the system will be developed and operated. For instance, the system design concept describes how much of the system will be automated and how much will be manual. It considers the major pieces of data that the system will include and the primary sources of the data. The design also identifies the information that managers want to receive as output from the system.

It is important to assign priorities to different types of information. For instance, an LEA may place the highest priority on child data, second priority on personnel data, and third priority on financial information. This priority list will determine the order in which the system is developed. The portion of the system dealing with child data would be designed and implemented before parts concerned with personnel. This approach ensures that the system provides managers with the most important information at the earliest possible time.

There are several specific alternatives to consider in development of basic system design concepts.

Integration with the General Education System. In many cases, a special education management-by-information system can be integrated with the general education system. If the general education system contains some of the data necessary for the special education system, linking the two systems will help minimize duplication. The design of the general education system may influence the design of the special education system.

The general education information system in the Houston LEA is several years old. It includes information on each student enrolled in Houston's public schools. The special education information system has been incorporated into the general education student system. The computer integrates

DESIGN SYSTEM

special education data with general education data; it can produce reports that provide only special education information or special and general education information for each student.

In the Brevard County LEA, data for exceptional education personnel and costs are part of the general education information system. Data for exceptional and general education students are now partially integrated but will soon be in one system.

Adoption of Another SEA or LEA System Design. Before designing a system, managers should examine systems that have already been developed. Part of an existing system may be adapted to the SEA's or LEA's needs. Few systems, however, can be completely transferred from one LEA to another. Managers should review existing systems for ideas rather than with the intent of adopting them unchanged. A system must satisfy the unique needs of each area.

As noted earlier, Appendix A contains summary descriptions of several existing systems.

Determine Who Will Design the System

It is helpful if overall responsibility for the system is assigned to one member of the special education staff. The person who assumes overall responsibility should have a thorough knowledge of special education in the SEA or LEA. The person should be able to understand the needs of other special education managers. This individual can then provide direction for system development and serve as the primary source of information about the system.

Although responsibility for development should be assigned to one individual, many different people should work on the design -- members of the special education staff, the general education staff, and the data processing staff. This helps to ensure input from these parts of the SEA or LEA and maximizes use of available resources.

If SEA or LEA development staff feel they need help in designing a system, an outside firm can be considered. Outside assistance can also help limit the amount of time required by special education staff. However, no external group can develop a good system without the active participation of SEA or LEA personnel.

Special education managers in the Montana SEA decided to contract with an outside firm to begin design of a system under the managers' guidance. The firm spent approximately eighteen months developing data on children and personnel.

The New Hampshire SEA also used outside firms to help design its special education information system. A consulting group worked with special education managers to identify needed information, desired system capabilities, formats, procedures, and output. To develop the necessary computer programs, the

SEA contracted with another outside company, which wrote new programs that adapted previously developed programs.

Sources of assistance other than an outside firm may be available. For instance, graduate students and faculty from local universities may be able to provide assistance.

Even in cases where outside assistance is involved in system design, SEA or LEA managers cannot turn over all of the work. Outsiders must work closely with special education managers to ensure both that the system will meet their needs and that managers clearly understand the system design. One way to minimize costs of outside assistance is to purchase a software package after system needs and basic design have been determined.

Outside assistance may not be necessary at all. Very simple systems that can be designed and implemented totally by special education managers can fulfill most managers' needs.

Develop a Schedule for System Development

A timeframe for system development helps to keep the system development proceeding steadily. A schedule includes the steps involved and projected completion dates for design and implementation. Because problems will arise, the schedule should be realistic and flexible enough to allow time for dealing with them.

In the Great Falls LEA, special education managers promised principals and teachers that they would receive computer print-outs by a certain date if they submitted data on time. Computer problems, however, made it impossible for managers to fulfill their commitment. The principals and teachers became disillusioned, and the LEA had to win their cooperation a second time.

Although it can take up to three years to implement a system fully, a system can begin generating useful information within the first year. In several SEAs and LEAs, managers found that parts of the system which were implemented before others quickly provided useful information. This information increased support and enthusiasm for the rest of the system.

Develop a Preliminary Design

The first draft of a system design should define all aspects of the system --data elements, automation, forms, procedures, reporting, confidentiality, schedules, staff responsibilities. However, the development team should regard a design as preliminary until the system has been fully reviewed and tested. Before implementing the system throughout the SEA or LEA, system developers should pilot -- or test -- the system with a limited number of data providers and users. After this step, the system design can be revised and finalized.

A system design has several basic components.

Data Elements. A major design component is the information that will make up the system. The three basic types of information (children, personnel, and finances) require different data elements, which may be actual or projected. The list of information can come directly from the list of needed information developed in step 3 of this guide. As noted earlier, Appendix D is a suggested list of data elements.

Data can be collected in individual or aggregate form. An LEA system should be child-based; that is, all data should refer to the smallest logical units--such as the child and the teacher. LEA managers need information on individual students, while SEA managers are not routinely involved in issues relating to specific children. Therefore, SEA systems should collect data from LEAs in aggregate form. LEA data must also be in individual form so that aggregate data can be traced back to individual students for monitoring.

Automated versus Manual System. The system design depends at least partially on whether the system will be manual or computerized. Computer systems range from the extremely simple to the highly sophisticated. Simple systems can summarize large quantities of data; more sophisticated systems can cross-reference and analyze data. Although computerized systems can be extremely efficient, they are not always necessary. Even very small LEAs or SEAs with few handicapped students, however, can frequently benefit from simple automation.

The capabilities of LEA or SEA special education staff affect the decision to design a computerized system. Although it is helpful if special education staff developing the system are somewhat familiar with computers, the SEA or LEA may have a separate data processing department with available staff, or it may be possible to contract with an outside firm. It may also be possible to develop a timeshare computer system. Without personnel familiar with computers, it may be best to design a manual system, a very simple computerized system, or a partially computerized system. Special education personnel should recognize, however, that computers are only aids that facilitate storage and manipulation of data. If a computer and computer program are available, special education staff should not fear using them.

It is important to point out here that while automation can be highly beneficial, it can also be a detriment to the management-by-information system. If computer programs and processes are not designed well, the result can be a useless system. Therefore, although automation should not be allowed to dominate system design, its importance to the usefulness of the system should not be underestimated, and programs and processes should be carefully designed.

Data Collection Forms. The design of data collection forms is very important because the forms determine the data items to be collected. The forms must collect all necessary data and, at the same time, be easy to understand and complete correctly.

The design of the forms depends partially on the individuals who will be entering data. Before forms are designed, it should be clear who will be responsible for their completion. Persons filling out the forms will need to have easy access to the required data.

To avoid duplication of effort, regular referral and staffing record forms can also serve as data collection forms.

> The special education data collection form for the Colorado Springs LEA is the Staffing Report and Student Data Form, which is always completed when a student enters a special education program.

> In South Carolina, the LEA application for P.L. 94-142 funding serves as the data collection form.

Another way to minimize duplication is to use data that are collected as part of the general education system. If the systems can be integrated, special education data collection forms are designed so that they do not request data already collected by the general education system.

In some SEAs and LEAs, managers use the data collection forms to correct or update previously submitted data. Those who provide data need to become familiar with only one form rather than a submission form and a correction form.

The means of processing data also affects the design of data collection forms. For instance, if data will be keypunched onto cards, the format of the data collection sheet should be the same as the format of the cards. Each line on the data collection form should represent one line for the keypunch operator to put on a card. Other methods of entering data into a system work well with other formats.

> Anne Arundel County enters all data into its system with an optical scanner. The scanner recognizes light and dark, but cannot "read" characters. Data collection forms list the possible information, and data providers simply darken the circles next to the appropriate responses.

Data Entry and Editing. One of the greatest problems in data entry is the temporary increase of data at the beginning of the school year when most students first enter special education programs. Data entry should be designed to manage the data flow, both at the beginning of the year and at other times when the amount of data submitted increases or decreases significantly.

> In the Great Falls LEA, data are submitted on a staggered schedule. The four groups of data providers submit monthly data during a different week each month.

Mechanical procedures can also facilitate data entry. Some LEA and SEA managers have found that keypunching data onto cards for entry into the computer is extremely time consuming. Other methods of data entry may be more efficient. One possibility is a data entry system in which data from collection forms are typed into a terminal and then transferred to the computer. Another possibility is a direct method of data entry like the optical scanner that Anne Arundel County uses. The optical scanner transfers the data directly onto magnetic tape, eliminating keypunching.

Editing data ensures elimination of technical errors. Data should be edited at four separate points. Data providers edit data before they submit the forms. Another individual edits data when they are received by scanning each form for technical errors. The third edit should occur at the point of entry into the system where the computer edits data for internal consistency and logic. After these three edits, the system should produce a turnaround document that duplicates the completed data submission form. This document is sent to data providers for corrections. The people who provided the data initially have the final opportunity to verify that the data in the computer is correct.

Data Reporting. Because they serve as a basis for analysis, reports are most helpful if they present information in a way that is useful to managers. Reports should be easy to read and interpret and should include only relevant information. At the same time, they do not need to be in the same format as state or federal reports.

> New Hampshire SEA special education reports provide information requested by the federal government. Because special education managers prefer the format that is useful to them, information for federal reports is manually extracted and transferred to the federal data collection forms.

A flexible system design produces both special and standard reports.

> The special education information system in the Anne Arundel County LEA produces several regular reports. It can also produce reports in response to special requests. Limiting the number of regularly issued reports avoids inundating managers with unnecessary information.

Confidentiality. There are several ways to ensure confidentiality of special education student information. Confidentiality can be the result of procedural measures; an example is to limit distribution of information.

> Houston LEA managers developed a list of individuals authorized to receive computer reports. Individuals who are not on the list must go through a special process to request reports. Students' names may be removed from reports supplied in response to a special request.

Mechanical measures can also be designed into the system. Access to the computer that contains special education information can be limited. At the same time, data can be coded so that student names do not need to be used. While the LEA system maintains personally identifiable data, it sends coded data to the state. The same codes can be used for general and special education data; all LEAs in the state can use the same codes to simplify data collection for the SEA. Student code numbers logically include LEA and school information as well as a unique identifier for each child.

Colorado Springs LEA managers assigned each student an identification number. Any report seen by individuals other than special education staff has identification numbers instead of names.

The Great Falls LEA special education information system uses students' names on data collection forms and students' initials and birthdates on reports.

Timetable. A timetable should establish dates for system procedures. Key points in the timetable include those listed below.

- Train data providers: Before the school year begins, all data providers should be trained in data collection and submission procedures. Additional training sessions should occur whenever changes are made to the system. Training should involve personal contact as well as written instructions.

- Send out data collection forms: Data collection forms should be sent to data providers well in advance of submission deadlines.

  At the beginning of each year, Colorado SEA managers provide all LEA managers with a Data Acquisition Plan, which contains all SEA data collection forms for the year and dates for submission.

- Return data collection forms.

- Edit data: All data should be edited at the four points discussed previously.

- Process data and generate reports: The timetable for report production must be developed to meet managers' needs for information as well as state and federal reporting schedules. It is important to allow enough time; problems in computer processing can slow down report generation. Every schedule should include some time to handle unexpected situations.

- Distribute information.

- Monitor information for accuracy.

- Update information: The data base can be updated continuously or periodically. Continuous data entry helps to avoid the problem of large masses of data submitted simultaneously. It also ensures that information is always up-to-date.

  The Colorado Springs LEA collects student data throughout the year to keep the data base up-to-date. New data are entered into the computer as they are submitted, and the file is revised. Those who provide data are periodically sent reports so that they can check information and change data as necessary.

Making everyone involved with the system aware of the procedural timetable helps to ensure that all needed data will be submitted and processed on schedule.

Software. Computer programs are a tool for generating needed reports; they should not be allowed to determine the information the system produces. Therefore, development of programs occurs most logically after most of the other elements of the system have been designed. Computer programs are available from several sources. LEA or SEA data processing staff may be able to develop them. Customized software packages appropriate for LEA systems can be purchased. Programs that have been developed and are being used by LEAs and SEAs are often not proprietary and can be shared with other SEA and LEA managers. Although most of these programs will require some modification when moved to a new SEA or LEA, they may provide a good starting point.

Staff Responsibilities. To make sure that staff responsibilities for developing and maintaining the system are clear, the best approach is to have special education staff responsible for both special education programs and the information system. The split that can occur between staff responsible for the information system and staff responsible for management of special education is thus avoided. As both data providers and users of the information generated, special education staff have the greatest incentive to manage the system well.

Review and Revise Preliminary Design

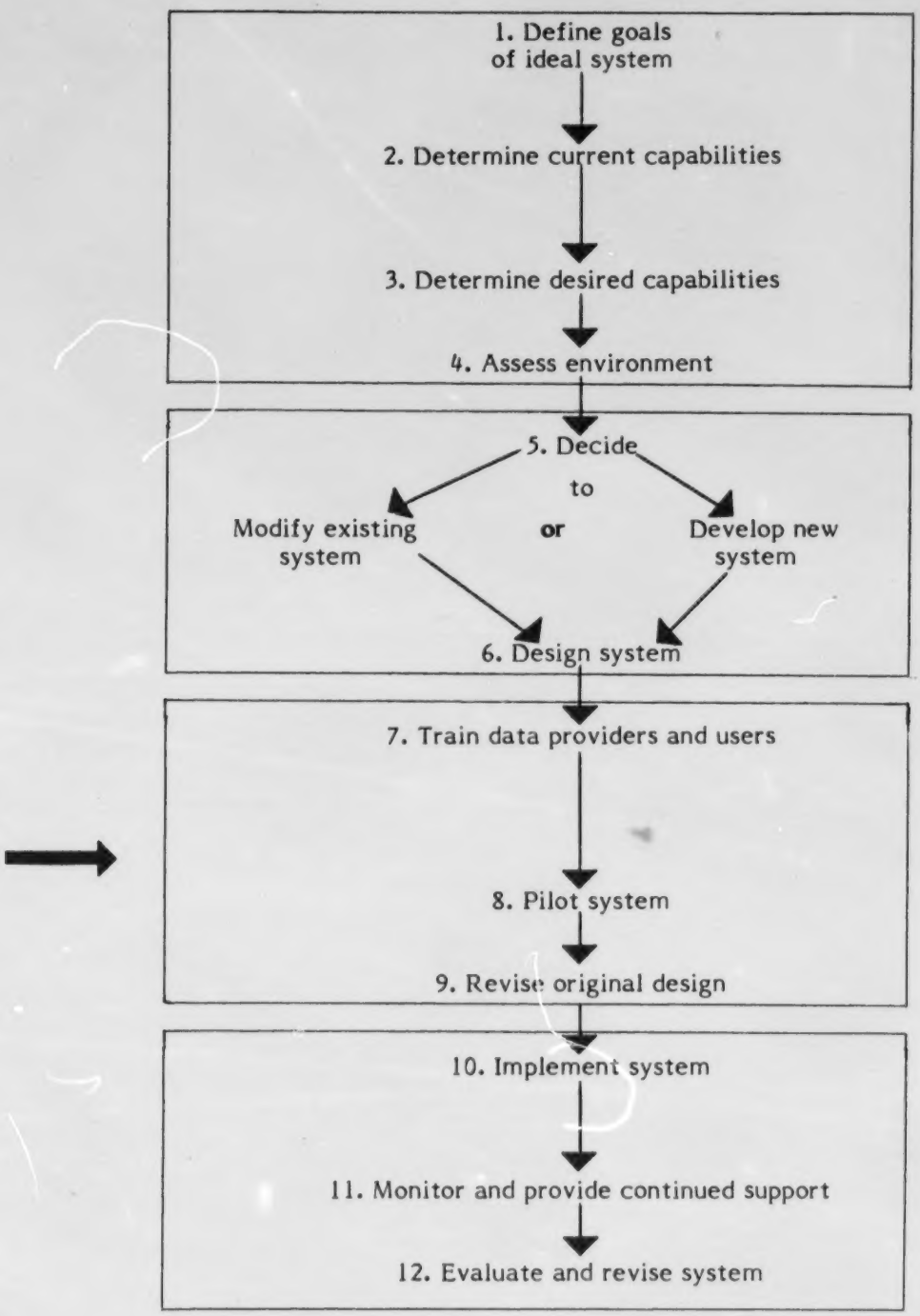
Data providers can review the design of data collection forms and the timetable for supplying data. Data users should verify that the system will supply the information that they need.

Review of the preliminary design offers an opportunity to explain the positive effects of increased information on service delivery. Involving data providers and users in system review gives them some control over the system. If they recognize that the system has taken into account their abilities and needs, data providers and users are more likely to view it as beneficial. New Hampshire SEA managers found that such input greatly strengthened the original design and increased support for the system.

Decide on Final Design for Testing

The decision for the final design may involve several individuals, including the director of special education and special education staff. Finalization of the design provides a solid basis for the system test. All key people should sign to indicate their acceptance of the system design. Any further changes to the design will be in response to the results of the system test.

Steps in the Development of a Special Education Management-by-Information System



PHASE III - TESTING

Step 7 - Train Data Providers and Users

Before the system is ready to be pilot tested, it is necessary to train data providers and users in system procedures and reports. Those who will be participating in the pilot test should meet in small groups for training. Training can be provided separately for data providers, data processors, and information users. While all training sessions should be used to explain the benefits of the system, training for the different groups should focus on specific needs. Data providers should receive training in data entry form completion and data submission procedures. Information users should receive training in report interpretation and special report request procedures.

Materials such as samples of completed forms and a written explanation of the system operation should be provided at the training sessions.

As the system is introduced, it is important to assist data providers and users. LEA and SEA staff who understand the system should be made available to answer questions and deal with problems data providers and users face.

> In New Hampshire, state special education staff held many meetings with small groups of LEA staff to answer questions about the system. In these small groups, people were more willing to ask questions. SEA staff were also available to answer questions over the telephone.

Step 8 - Pilot the System

Once the system has been designed, it is necessary to see if it functions effectively in actual use. Testing the system with a few data providers before it is implemented in the entire SEA or LEA has two key advantages: (1) It can highlight unexpected problems in the system that can be corrected before full-scale implementation begins and (2) it allows some data providers to gain experience with the system and suggest revisions.

> New Hampshire SEA special education managers conducted a manual pilot of their system with five LEAs. The pilot focused on problems with obtaining information and on the usefulness of data. As an incentive to cooperate, the participating LEA managers were not required to submit data again when the system was fully implemented five months later. SEA managers found the pilot helpful both for debugging the system and for developing support among previously hesitant LEA managers.

Along with pilot tests, phasing in different parts of the system at different times facilitates implementation. Managers can begin with the collection and processing of child data, followed by personnel data and then financial data.

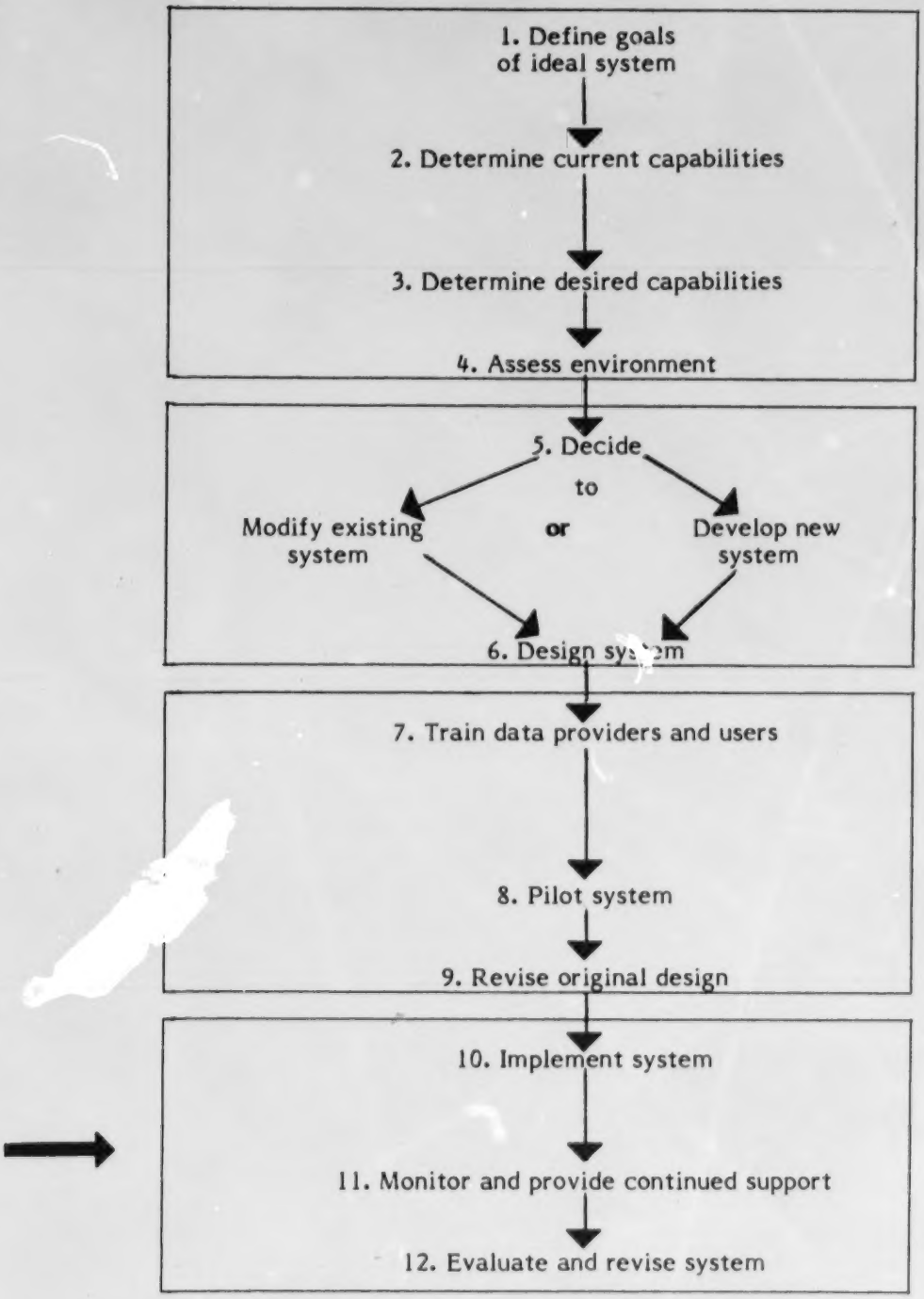
New Hampshire SEA managers found that a phased approach had several benefits. LEAs could integrate the system without completely disrupting existing operations, and they could better understand the system because they were not required to learn the entire system at once. As they gradually learned the system, they recognized its benefits more readily and understood the need for each part of the system. The phased implementation also meant that problems were recognized and resolved before they became crises. Programs and procedures could be modified more readily because they involved fewer areas.

Phasing in the system also allows managers to take advantage of some of the benefits of the system earlier. Managers realize the benefits and give greater support to later phases.

Step 9 - Revise Original Design

Pilot testing the system will undoubtedly bring out some problems. The system can then be revised to resolve them. A quick response to problems will help to develop the support of data providers and users. It will also ensure that problems do not build up and result in a loss of support for the system in the SEA or LEA.

Steps in the Development of a Special Education Management-by-Information System



PHASE IV - IMPLEMENTATION AND OPERATION

Step 10 - Implement the System in the Rest of the SEA or LEA

After the system is piloted and revised, it can be implemented in the entire SEA or LEA.

Since previous training sessions were only for participants of the pilot tests, training sessions should be provided for all data providers in the SEA or LEA. These training sessions should begin well before actual implementation since conducting many small training sessions can take several weeks. As implementation begins with data collection, several SEA/LEA special education staff should be made available to assist with data submission.

Another way to facilitate implementation is to implement the system one part at a time. For example, child data can be collected and processed first. As more parts of the system, such as personnel and financial data, are implemented, pilot tests are repeated before full scale SEA/LEA implementation takes place.

Initial implementation of the system will not be an easy process. Everyone involved will be unused to the data and procedures. As a result, SEA or LEA system development staff will need to commit themselves to spending the time necessary to solve problems and provide support during implementation.

Step 11 - Monitor and Provide Continued Support

Monitoring

Just as SEA managers are responsible for ensuring district compliance with program regulations, they are responsible for ensuring that LEAs maintain accurate and verifiable information. SEAs should monitor both LEA information and procedures, particularly when data collection and processing procedures are changed. There are two complementary ways to monitor information:

(1) Samples of information should be selected randomly and traced to their origin each year.

(2) Information and procedures should be verified by SEA staff during LEA site visits.

> A Montana SEA special education staff member and two subcontractors visit each LEA every three years. They verify reported data with LEA managers during these visits.

Data providers should not know in advance when a site visit will occur. The personnel conducting the monitoring should review the daily procedures, not special audit information developed in preparation for the visit.

If LEAs have a clear audit trail, SEA managers can easily monitor data. LEAs should monitor the data they receive by periodically reviewing school records.

If monitoring is balanced with technical and program support, data providers will view SEA and LEA managers as something more than auditors. The monitoring will provide valuable information and assistance to the managers.

> In Florida, special education staff conduct program audits, reviewing both special education programs and data provided through the information system. However, the focus is on the programs; the results of the audits are used to help districts satisfy program needs and to ensure compliance.

Management and Staff Involvement

Both management and program staff must be continually involved in the system's operation to understand its capabilities.

> In the Montana SEA, special education staff members are responsible for both the program and information system. The SEA staff are therefore more likely to understand and use the system in fulfilling their program responsibilities.

If the system is computerized, SEA or LEA special education staff members can be assigned to act as a liaison between data processing and special education staff.

> In the Colorado Springs LEA, one data technician is the special education staff's link with the district data processing staff. The data technician interprets information needs, keypunches and edits submitted data, and assists data providers with completing forms.

Continual Support

Because staff membership will change over time, data providers and users will need regular training in use of the system. Several LEAs and SEAs have periodic in-service training sessions. One person at the LEA or SEA may serve as a contact for system users with questions.

> Florida SEA managers conduct yearly training sessions for LEA staff members to review changes in data collection forms or procedures. Written responses to the questions raised during these sessions are given to all LEAs. The SEA information system staff also spend a great deal of time answering questions by telephone.

Along with training and responsiveness to specific questions, a users' manual serves as a reference for system operation. The manual should include sample data collection forms and instructions for completion, data submission procedures, and an explanation of report forms. A data element dictionary can be useful in addition to a users' manual. A dictionary defines all data elements included in the system.

The Great Falls LEA has developed a users' manual that focuses on data collection forms. Managers are planning to develop a more detailed manual in response to requests from teachers.

Step 12 - Evaluate and Revise System

Development of the information system does not end with implementation. As programs and staff change, new needs for information will evolve. Managers responsible for the information system must make sure that the system responds to changing needs and is always kept up-to-date. The usefulness of the system should be evaluated regularly and should involve both data providers and users. The system should then be revised and new procedures implemented. Evaluation, revision, and implementation become a regular cycle in system maintenance.

Managers should expect a system to change. Every three to five years, the SEA or LEA should repeat steps 1 to 4 of this guide. Some systems will require significant revision at this time. New laws and regulations or the availability of new computer capabilities might be the major impetus for the changes. Increased use of the system might also spur some changes.

As LEA managers in New Hampshire became increasingly familiar with the SEA system, they began to use it more frequently. The frequency of use and the growing number of special requests had begun to strain the ability of the SEA to respond quickly.

Three years after the first reports were produced, New Hampshire began to consider providing each LEA with its own terminal. This would be a significant change from the centrally controlled system.

Not all systems will require major modifications in three to five years. However, SEA and LEA managers should review their systems periodically. Regularly scheduled reviews will ensure that the system continues to meet current needs.

Evaluating and modifying a system on a periodic basis also minimizes the number of times a system undergoes radical change. Because data providers and users have only a few refinements to learn at any one time, they are more comfortable with the system. Since the system appears more stable, data providers and users will give it greater support.

PITFALLS

The development and implementation of a management-by-information system usually occurs in response to an immediate need. Once managers recognize the need for information, they want it as quickly as possible. The pressure to develop a system quickly can cause managers to overlook some important aspects of good system development. Managers should be particularly wary of the potential pitfalls discussed on the following pages.

ADDRESSING ONLY REPORTING REQUIREMENTS

Letting state or federal reporting needs dominate system design can create a problem. The temptation is to create a system that will assist managers in meeting outside information requests. These needs are the easiest to identify and define. However, a system that takes into account only these reporting needs will not serve managers' needs fully. A good system meets both management and reporting needs.

OVERLY RAPID IMPLEMENTATION

The system must be implemented slowly enough so that data providers and users can become accustomed to it and so that the system can be revised as implementation occurs.

> When system implementation first began in the Brevard County LEA, managers began receiving many reports all at once. Because they had not become accustomed to the system, many of the reports were left unused. The number of reports generated has been reduced and will be increased gradually.

FREQUENT SYSTEM REVISIONS

The system is revised during initial implementation and after it has been fully implemented as managers' needs change. Too many revisions made too frequently, however, serve only to confuse data providers and users.

> Colorado SEA special education managers found that frequently revising data collection forms confused data providers. They felt that they never became familiar with the forms because new ones were required constantly.

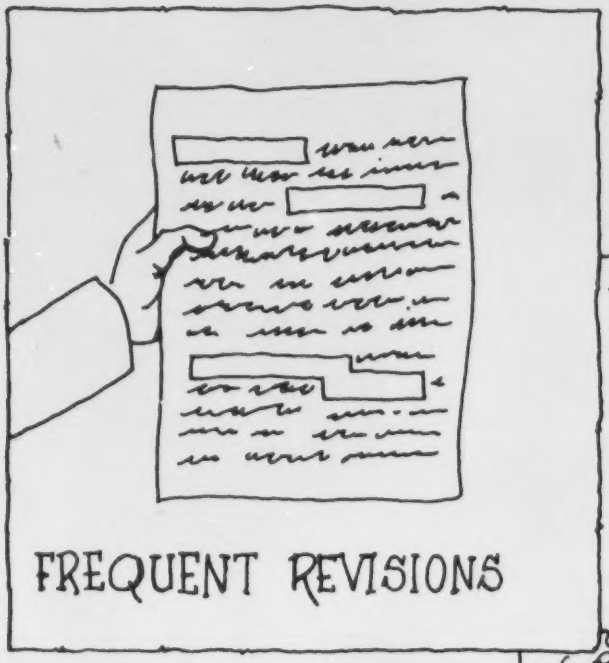
If data providers believe that a form will change soon, they will not be as careful to understand it.

PROMISING TOO MUCH

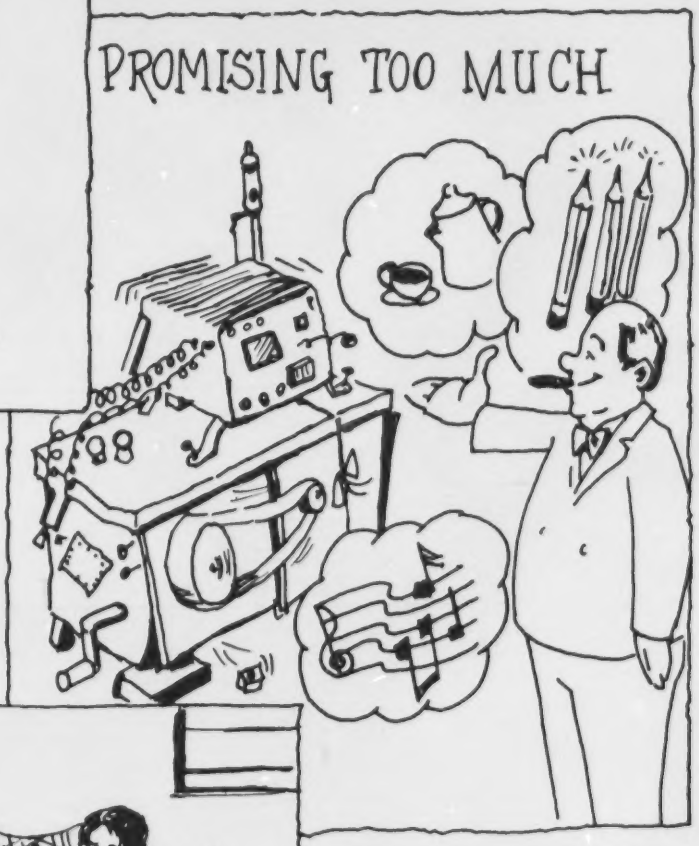
System developers should be careful not to promise too much to system users while the system is being developed. Development of any system will involve some setbacks, which may prevent managers from meeting users' expectations. Although system development has to include some deadlines and managers have to make clear to users what the system should be expected to provide, users should be prepared for problems in development.

> Once system implementation was initiated, managers in the Great Falls LEA found that problems in computer processing would prevent report generation. Teachers had been promised reports in return for data provision. When reports were not generated, teachers became disillusioned with the system.

PITFALLS



FREQUENT REVISIONS



NEGLECT

NEGLECT

Although an SEA or LEA may have an information system, it will be left unused if SEA or LEA managers essentially ignore the system. System development has to occur in a way that involves all potential system users so that they at least are aware of, and have input to, the information system. If efforts are not made to keep the system responsive to managers' current information needs, managers will stop using a once useful system.

Neglect may be caused by a lack of user confidence in the system. If the system does not include sufficient validation of data, users may not accept the information generated.

> Data providers in the Anne Arundel County LEA initially maintained manual files for their own use. LEA staff worked closely with small groups to demonstrate the accuracy of the computerized system. Gradually, data providers accepted the validity of the system and stopped keeping the duplicative manual files.

When data providers also actively use the system, they have greater motivation to ensure that the data they submit is accurate. The more people use the system, the more accurate the data is likely to be.

A system that is overly burdensome to maintain will also fall into disuse. Managers will perceive the system as a nuisance and will be disinclined to use it for any purpose.

A lack of integration with other systems can also cause the special education management-by-information system to be ignored. Managers may think that they already receive the data.

APPENDIX A

Appendix A contains brief summaries of the systems at each of the state education agencies and local education agencies that MAC personnel visited while developing this report. Each summary discusses the scope of the system and reviews the information collected, the information reported, and exemplary practices illustrated. As noted earlier, the systems range from fully manual to highly automated.

ANNE ARUNDEL COUNTY LEA, MARYLAND

OVERVIEW

The Anne Arundel management information system is the result of the coordination and computerization of information previously maintained in scattered manual systems. Prior to the initiation of the current program, Anne Arundel County was already the base of computer operations for Maryland's statewide Special Services Information System (SSIS) because of its large computer capacity and capability.

Anne Arundel's Student Data Base now contains information on all children enrolled in the county's public schools. The data base is divided into four subsystems, one of which is the special education subsystem. (The other three subsystems cover suspension, discipline, and testing information.) A common student identification number ties all four subsystems with a student master file containing demographic data. Child-based information for the special education subsystem is collected by Pupil Placement Workers and coordinated by the Department of Special Education.

The three main users of information from the system are the Department of Special Education, which utilizes the data for analysis and general management control, staffing determination, budgeting, and responses to requests; schools, which use a frequency report as a class list; and the state of Maryland.

INFORMATION COLLECTED

The special education subsystem contains primarily student-based data, although it also includes some personnel information. Student data includes school facilities information, reading and math ability, any changes in the child's status, and recommended and provided services.

Services are defined by the handicapping condition, the level and frequency of service, and the type of service. For each service specified, the department and teacher providing the service are identified. The Department of Special Education also maintains manual files on assigned teacher positions and locations.

A computerized payroll-personnel system details information on teacher certification, classes or subjects taught, and hours of teaching. This system is not compatible with the Student Data Base.

Financial data are developed using a combination of the information in the special education subsystem and manual budget information maintained by the Director of Special Education. This developed financial information is then computerized in a separate budget system.

INFORMATION REPORTED

There are four regular special education subsystem reports: an alphabetical list of students, the SSIS reports of state required information, a frequency report by school which lists the recommended and provided services for each student along with service frequency data, and an "open services" report by school which is a statistical summary by race and sex. Other reports are run by special request.

EXEMPLARY PRACTICES

Anne Arundel's system yielded a large amount of information after less than a year of development time because it utilized data already in the computer data base. Input to the student data base is streamlined. For most students, one sheet of paper contains all of the necessary input data. The data cover key information relating to a child's placement and program.

BREVARD COUNTY LEA, FLORIDA

OVERVIEW

Brevard County already had a computerized information system for general education when it began to establish a special education student data system. Development began two years ago and is still continuing. The special education system is designed primarily to meet the department's own needs rather than to fulfill reporting requirements.

The general education system is comprised of six broad data categories with varying degrees of interdependence: student systems, finances, staff, facilities, curriculum, and community. Student systems contains data on student membership, scheduling (secondary only), testing, and grades (secondary only). It contains the special education student data system. Finances, staff, and facilities also contain some information about special education.

Financial data about special education are included in the various financial subcategories -- cost accounting, purchase orders, accounts payable, materials and supplies, and proposed budget -- but the general education system is capable of breaking out information about special education. The same is true for both facilities, which includes maintenance and vehicle cost, and staff, which includes position control, payroll, and personnel reporting.

INFORMATION COLLECTED

The data contained in the special education student data system include personal and demographic information about the student; exceptional education programs in which the child participates; some information about least restrictive environment; dates of staffing, program placement, and dismissal; numbers of hours by program; date of latest psychological test; other serving agencies; and dates of parental permission, eligibility letter, IEP, and due process letter. These data are taken from the exceptional education student files. Brevard County expects to add test score information to its data collection.

The general education computer system keeps track of each exceptional student's courses. (Florida reimburses LEAs on the basis of student time in educational programs.) The accounting department records exceptional education expenses in each program category for salaries, benefits, purchased services, material supplies, other expenses, and capital outlay.

In addition to the general and special education computerized information, the special education department manually maintains and compiles child-find statistics.

INFORMATION REPORTED

The special education student data system currently generates four reports: a history file, a class test, an alphabetical roster of all district students, and student full-time equivalents (FTE) by program category. Additional reports are expected to be added, including an end-of-year summary and a list of students by class whose psychological examinations are outdated. The general education

computer file also generates reports containing information about program costs, individual student records (secondary students only), teachers (including the percentage of time spent by each teacher in each program category), and labor distribution by school.

EXEMPLARY PRACTICES

The information system is highly useful for planning budgets because it incorporates student and staff population projections and compares existing personnel with needed personnel. The system accesses general education files when possible, eliminating duplication and allowing files to be cross-referenced.

COLORADO SPRINGS LEA, COLORADO

OVERVIEW

The Colorado Springs LEA began computerizing special education data several years ago in order to respond better to state and federal reporting requirements. Most of the development work was done by the Administrative Assistant for Support Services and one of the special education Supervisors. The computer data base currently includes most personnel and student information. The input document is the Staffing Report and Student Data Form, the regular report for referrals and staffing. Any change in status during the year is input from the Change in Staffing Report Form. Financial data continues to be collected and reported manually.

INFORMATION COLLECTED

When a student is first staffed, and again at the beginning of each school year, teachers record the following information on the Staffing Report and Student Data Form: the student's school grade; name, sex, age, ethnic category; dates of referral, staffing, and start of special education; primary handicapping condition; primary service delivery method; entry status; and whether the student also receives speech therapy. After the student's annual review, the end-of-year disposition and date of staffing review are added to the system. All of these data categories correspond to those used by the federal government or by the Colorado Department of Education. Colorado Springs processes the data on its own computers and sends it on tape directly to the state.

The only personnel data integrated with student data exist on the Staffing reports. Any other special education personnel data are maintained by the district personnel department in the general education management information system.

The district accounting department manually keeps track of special education costs by service delivery method. This information is used to meet state reporting requirements and includes salaries, supplies and materials costs, and federal revenues received by the district for special education.

INFORMATION REPORTED

The reports generated by the system are: summary totals of all students by program by category, generated down to the individual school level; an alphabetical roster of students by program by district; a student list by school by grade; and a list of students by teacher. Some of this information is sent on tape to the state.

State reporting forms that require additional information are filled out manually from computer printouts and files. All federal forms are completed manually.

EXEMPLARY PRACTICES

Although district teachers and principals do not at this time use the reports produced by the system, special education administrators do use them to keep track of student population and services. Reports are also used to examine teachers' student loads.

Because computer data are kept up-to-date, and because of fast turnaround (24 hours to produce a report), Colorado Springs has been able to simplify the December child count. The computer produces an accurate summary of the total number of students served at the time of the count.

A large part of the manual completion of forms for state reporting purposes has been eliminated by coordinating the LEA system with the state's computer system and sending reports on tape. Duplication of effort has been reduced at the input stage as well by the use of the regular referral and staffing form as an input document.

GREAT FALLS LEA, MONTANA

OVERVIEW

The Great Falls information system, called Monitoring the Educational Performance of Students (MEPS), is based on the Precision Teaching (PT) method. The system was begun in 1978 and it is still under development. The intent of the system is to describe individual progress toward IEP goals, to predict reasonable dates when goals will be reached, to summarize pupils' growth in daily instructional programs, to summarize groups' performance and progress, and to meet state and federal requirements for information. Before the introduction of the computerized system, administrators manually monitored students' progress. The system tracks individual special education students' monthly progress and growth and provides each student's current placement data. The MEPS system is completely separate from the general education computer system.

INFORMATION COLLECTED

Six of the MEPS data collection forms provide information on students. Data include basic demographics, handicapping condition(s) and severity, type and hours for each category of special education services received, the completion status of IEP activities, the link between individual students and their educational goals, and monthly assessment status. For each program unit, another form provides personnel information such as teacher name, coordinator, type of program, certification information, non-instructional professional staff, and name of classroom aide.

All cost data are recorded and processed separately from MEPS, although the special education department receives a computer budget status report every two weeks. Student transportation information is also computerized separately from MEPS in order to facilitate scheduling for children who receive special services outside their own neighborhoods.

INFORMATION REPORTED

Five reports are planned which will summarize student and class progress toward IEP goals. These reports will be produced monthly for the use of teachers and coordinators. Individual progress reports will allow teachers to gauge the effectiveness of different teaching methods and to develop realistic goals. They can also be used to show parents and students themselves the students' progress. The group progress reports can be used both to show teachers and coordinators how well classes are progressing as a whole toward their goals and to locate and assist teachers whose students are not meeting their goals. Print-outs of data that would satisfy state reporting requirements are also planned.

EXEMPLARY PRACTICES

MEPS is designed to be totally integrated with the day-to-day process of providing special education services. Its primary purpose is to help teachers and administrative staff more effectively serve handicapped students. It is also highly flexible with respect to monitoring progress toward IEP goals; goals can be academic or non-academic, individual to a student or assigned to several students. MEPS provides information for parents and students as well as teachers. Once all the MEPS software programs are developed, they will be available and easily adaptable to other districts.

HOUSTON LEA, TEXAS

OVERVIEW

The design of the Houston Independent School District's (HISD) management information system was a cooperative effort on the part of special education administrators, school district programming staff, and one of the state's 20 Educational Service Centers. State and federal reporting requirements as well as LEA programming needs were used as guidelines for the design of forms and the resulting reports.

The special education student data system is part of the general education system which is made up of three main subsystems: student, financial, and personnel. The three subsystems are not integrated. Special education student data are gathered from forms used for other regular program procedures. Special education financial data are maintained by the HISD accounting department; special education personnel data are maintained by the HISD personnel department.

INFORMATION COLLECTED

Special education student data include:

1. student's name and school,
2. date special education participation began,
3. primary handicapping condition,
4. secondary handicap,
5. instructional option,
6. termination reason,
7. dates of Admission, Review, Dismissal/IEP and evaluation,
8. related services -- hours per week,
9. source of transportation,
10. total instructional hours,
11. adequacy of services,
12. severity of handicap.

Standard personnel data are collected as part of the general education system. Personnel information is kept in a computer file separate from the special education student data base. Names of all special education teachers and aides are manually maintained on a school unit basis.

Special education financial information is also separate from the student data base. Budget information is compiled by the HISD department that handles the general education budget as well, but special education expenditures are maintained separately.

Regional resource centers monitor requests for special education materials. The centers maintain the equipment and track every request from teachers. The equipment inventory is computerized, while requests for equipment are manually maintained.

A computerized in-service training system is planned to include an assessment of in-service training needs . Currently, in-service training activities and materials are manually tracked at the HISD office. When the computerized assessment system is added, teachers will report their needs on a special form.

INFORMATION REPORTED

The information obtained for each special education student is printed in summary for each child by district, area, and school. This report is intended for use in preparing the state required Annual Special Education Statistical Report. The report fulfills the federal December child count requirement since the system is updated throughout the year and the report can be produced when needed.

This report replaces manual generation of the same information. In addition, it functions as an aid to special education staff in making programmatic decisions and monitoring administrative tasks. For example, staff are required to evaluate each special education student at least once every three years. The computer allows a roster to be made of students ready for evaluation. Other computer print-outs list students by handicapping condition.

EXEMPLARY PRACTICES

Houston's special education data collection involves the use of one main form. Eventually, the form will be completed during IEP development meetings, further streamlining data collection .

The Special Education Department is developing additional information systems, such as a materials file and in-service training system, which will increase accountability for expenditures and aid teachers as well as administrative staff.

COLORADO SEA

OVERVIEW

Colorado's information system was developed primarily to meet state reporting requirements mandated by the Colorado Handicapped Children's Education Act. The State Special Education Services Unit designed the system and is its principal user. The information system provides data on special education services and costs to the state legislature, educators, and the public. The system was not designed for use by local districts although it serves as a mechanism for determining state reimbursement to LEAs.

The system is composed of five subsystems: cost (prior year, current year, and one-year projection), pupils, staff, actual cost distribution, and "consolidated," which includes summaries from the other subsystems.

INFORMATION COLLECTED

LEAs supply student information in both individual and aggregate form. The individual data include handicapping condition, major delivery system, age group and school level, entry status, end-of-year status, and time in program (by instructional and support staff time). Only aggregate information is supplied on the number of students referred to special education, assesed, formally staffed or waiting, placed or awaiting placement, or receiving annual reviews. Aggregate current and projected unduplicated counts of students to be served by handicapping condition are also provided.

The personnel information for each teacher and support staff member includes personal identification data and salary, FTE, and other assignment data. Data on estimated and projected staff FTE and salaries by handicapping condition are also collected for the current and projected fiscal years.

Financial information is collected for the prior school year and current school year and projected for one year for salaries, benefits, purchased services, support services, supplies and materials, capital outlay, transportation, tuition, foster home care, staff travel, and federal revenues received.

Administrative units also report data on facilities, transportation, and dates of full service by age and handicapping conditions.

INFORMATION REPORTED

In the Colorado system, sixteen of the fifty to sixty reports are considered major. Some of them pertain only to students while others combine student, personnel, and/or cost information. The three types of information are collected by category, which makes cross-referencing possible.

EXEMPLARY PRACTICES

Colorado's special education information system effectively meets all state and almost all federal reporting requirements. Because of the fast turnaround time from data input to report production, the system also meets federal reporting deadlines. The Special Education Unit has developed detailed documentation of the system, including general descriptions, subsystem file relationships, update and report cycles, and production schedules. This documentation would facilitate the system's adaptation by other SEAs.

FLORIDA SEA

OVERVIEW

Florida's centralized education management information system was mandated by state legislation in 1973. The statutes required the information to include "fiscal, student, program, personnel, facility, community, and other relevant data and the relationship between costs and effectiveness." That legislation also mandated "school based management" and placed primary responsibility for education with the local schools and districts. This implied that most data collected for state purposes must be available on a school-by-school basis. Primary responsibility for the management information system rests with the Department of Education's Bureau of Management Systems and Services, which developed the system in cooperation with a group of district representatives.

There are six major data bases in the total education system: student, staff, finance, facility, community, and programs. Most data are automated, and data collection for general and special education is highly integrated within each of the six areas.

INFORMATION COLLECTED

The Florida SEA collects data for four of the major data bases on an on-going basis: student, staff, finance, and facility. Three primary data collection efforts provide the student information. These forms provide data ranging from the sex of students to full-time equivalent hours by handicapping category.

Personnel data are also provided from three main sources: a survey of all public school staff, a system for instructors of exceptional students, and the LEA applications for P.L. 94-142 funds. Data collected include personal information such as name, race and sex; professional history such as certifications and positions; and projections of personnel by type of position and handicapping area. The SEA is developing a system to collect data on in-service training.

A program-based cost accounting system provides most of the financial data.

Through the Florida Inventory of School Houses (FISH), information is available on public school buildings, by type of building including exceptional child centers and classrooms. For each building a room analysis file is kept that includes square footage of the room, the number of teacher and pupil stations, and a design code indicating the use for which the room was designed.

INFORMATION REPORTED

The special education information reported from the student data base system includes: FTE hours by program, by grade, and by school; student race/sex/ethnic data by district; unduplicated membership by program by age group; time spent in program, by program; duplicated membership by program by age group; automated FTE projections by program; and student membership projections by federal age group.

Personnel data reported include a special education roster and an instructional staff roster including name, race, sex, work history, and current assignment descriptive information; and personnel projections by type of personnel and handicapping area.

Financial data are collected by handicapping program category as part of the automated statewide system that provides the basis for Florida's Educational Finance Program. Cross-referencing financial data with student and staff data gives cost per FTE and cost per staff unit by school.

The system data have become an integral part of the special education management functions in Florida. They are used for determining state funding allocations based on performance and need. They are also used for comparisons between districts to spot problems and foster improvements in district programs. Potential technical assistance needs are identified through the system, and compliance with state and federal laws is assessed. Other major uses of the data include coordinating projected personnel needs with programs offered in Florida universities, planning for future needs, and managing district programs.

EXEMPLARY PRACTICES

The Bureau of Education for Exceptional Students actively uses available data for both financial and program planning and operations, as well as using it for federal reporting purposes. The Bureau has achieved a healthy balance between its role as auditor and overseer of districts and its role in providing technical assistance and program support to districts. The integration of data has increased efficiency and effectiveness at all levels of the system, and the tying together of general and special education information appears to have resulted in improvements for both. Another noteworthy aspect of the Florida system is its extensive auditing program which sets funding penalties for inaccurate reporting of data.

Florida's detailed cost accounting system makes possible comparisons between districts and comparisons between cost and funding allocations. These comparisons allow a better understanding of relative efficiencies and funding needs. To this information, the state plans to add performance indicators that will measure educational achievement in district programs. The resulting combination of data should provide a valuable measure of overall effectiveness.

MONTANA SEA

OVERVIEW

Development of Montana's management by information system began in 1976. At the present time, the computerized portion of the system includes child and personnel data, but not financial data. An outside firm was contracted to design data collection forms, computer programs, and reports. Montana's special education management information system is minimally integrated with the general education system.

The three parts of Montana's special education system are based on three data collection forms: child count, including information on children, personnel, and service delivery method by program unit (each teacher is a program unit); the budget application, which includes projected special education costs for the coming school year by district; and actual expenditures, which includes actual special education costs for the past year by program unit.

The three parts of the system will be integrated. Budget applications will be interfaced with the child count, the state standards, and the actual expenditures for the previous year to ensure that budgets are consistent with last year's budget, the number of children served, and the types of services delivered. The interfacing of the three parts of the system will also allow cross-referencing of financial data.

INFORMATION COLLECTED

Student data, reported on one form by program unit, include sex, birthdate and initials; handicapping condition and level of severity; number of hours served by program unit; and, if a nonresident, the county and district numbers.

The child count form also supplies personnel data such as the name and FTE for the program unit, the personnel category, level of assignment, and name and FTE of classroom aides. (Some aggregate personnel data are supplied on the budget application form.) Program units provide actual expenditure figures for instructional services, supportive services, and other current charges. Budget application forms report special education projected costs for administration, supervision and instruction, library, transportation, plant operation and maintenance, school food services, student body and auxiliary services, and capital outlay.

INFORMATION REPORTED

The computer processing of child count data results in the production of 20 reports. The reports include the following key information: students by handicapping condition, FTE personnel by handicapping condition taught and funding source, program units with an age spread greater than six years, and teacher instructional hours per week by handicapping condition and age.

The system is used mainly to meet federal reporting requirements. It also provides information for the state legislature. Special education administrators have begun to use the system for management purposes, in particular to note

problems in service delivery. One report that shows budgeted versus reported FTE allows administrators to locate vacant positions. Another report showing age span of children in classes allows administrators to locate classes with unusually large age spans.

EXEMPLARY PRACTICES

The Montana system has managed to keep district reporting requirements to a minimum. Coordinated collection procedures allow cross-referencing and the production of several reports. With some modifications and the integration of the financial data, the system will meet federal reporting requirements. At the same time, the Montana SEA intends to use the system as a major source of information for special education administrators. The system will provide data for program planning and evaluation.

NEW HAMPSHIRE SEA

OVERVIEW

New Hampshire's special education information system (SPEDIS) is a result of the cooperation of local districts, the Office of Special Education, an outside computer programming consultant, and the New Hampshire Central Data Processing Agency.

SPEDIS was established as the "official" information source outside of the district, thereby eliminating duplicate reporting. The local district Annual Statement of Placement forms are used as input documents for SPEDIS. Information in SPEDIS satisfies the requests of the federal government, and the reported information also serves the needs of the local districts. (SPEDIS does not, however, automatically generate the reports for the federal government, even though the data are readily available from SPEDIS reports.) New Hampshire has designated a special education contact in each local area or region who coordinates all information requirements with the district, facilitates collection of information, and serves as a communications channel for problems and suggestions.

SPEDIS is primarily a child-based system. It defines the child's needs and reports what services the child is receiving. The system also includes data that enable state special education administrators to support requests to the legislature for programs and funding.

INFORMATION COLLECTED

Local districts keep data on each child's IEP, but SPEDIS keeps track of summary information. Data are continuously submitted to the state; about 500 to 1,000 input documents come into the special education office each week. The information collected falls into four categories: students, personnel, financial considerations, and buildings and facilities. Student data include personal identification data, primary and up to three secondary disability evaluations, diagnostic support, placement, and consent and discharge statements. Personnel data include resume information related to special education, involvement with various disability types, Pupil Placement Team members for each student, and the district contact. Financial information includes funding eligibility status, detailed in-district costs, and out-of-district costs. Information on buildings and facilities includes facility identification and services provided.

INFORMATION REPORTED

Information is reported in any one of approximately forty standard formats to serve both local school districts and the state government. Users specify which reports they would like. Common reports include rosters and child counts by district, by region, and for the state. A report-writer package allows special reports to be created on request. Special requests are denied only if the results would violate confidentiality.

EXEMPLARY PRACTICES

SPEDIS has three advantages: program development that allows early identification of user needs and phased implementation, simple reporting requirements and system operation, and the ease of modifying reported information.

SOUTH CAROLINA SEA

OVERVIEW

South Carolina uses a manual data collection system to satisfy two major needs: federal reporting requirements and audits for both districts and the state. The input sheets include federal data categories and formats. Additional information requested allows district data collection procedures to be monitored. South Carolina has also developed an interagency referral system as part of the effort to find children who need special education.

The information system of the Office of Programs for the Handicapped seeks to integrate three basic types of information: data required by P.L. 94-142, child count statistics, and child-find information. The P.L. 94-142 data input forms supply the most comprehensive set of data. A consultant handles general statistics and support documentation for the child count. The child-find system, Census of Adolescents and Tracking of Children with Handicaps (CATCH), is a formal referral system for children who may require special education.

The system is augmented by the pupil accounting system, which collects attendance data, and the basic educational data system, which profiles district services, personnel, curricula, and enrollment.

INFORMATION COLLECTED

The Office of Programs for the Handicapped regularly collects data for each of its three key subsystems. The P.L. 94-142 application contains three types of data: statistical information by program on personnel, facilities, children, and in-service training; narrative procedural information; and budgetary data by function and objects of expenditure.

Child count data are collected by classroom. They include the number of children by age and handicap and backup lists of names and handicapping conditions.

CATCH keeps track of referrals for unserved children with suspected handicaps and responses indicating the status of each referred child. Information is maintained by code numbers rather than by the names of children.

The attendance and enrollment information collected by the Pupil Accounting System meets state special education finance requirements. There are four primary input documents: the pupil attendance card from the child's teacher; the cumulative membership, attendance, and enrollment worksheet from each school; the membership and attendance report from the schools by category and by grade; and an end-of-year enrollment report.

The basic educational data system collects general information about facilities and specific information about personnel. The data base includes school facilities, materials expenditures, and students who are graduating. Personnel information includes teacher certification, experience, position, and activity.

INFORMATION REPORTED

The Office of Programs for the Handicapped annually compiles and distributes a statistical report of the information collected. It reviews the current status of programs and historical trends of factors such as the incidence of handicapping conditions, children served, personnel, multidistrict and nonpublic school programs, and facilities.

The quarterly CATCH status report tracks all referrals. It includes the number of children that each agency or district referred, a summary of referrals by age of the child, the number and handicapping condition of referrals served by agency or district, and the status of children not yet served.

The information is used to complete federal forms and helps ensure that districts comply with all requirements of P.L. 94-142. It also serves as a data base for analysis and is used to track referred children to ensure that none get "lost." The primary users are the federal government and the SEA, but districts also use the information, particularly the reports that CATCH generates.

EXEMPLARY PRACTICES

The South Carolina system satisfies two needs particularly well. First, it collects data efficiently for federal reports while focusing on district compliance with the full intent of P.L. 94-142. The SEA requires documentation of district policies and procedures. Second, CATCH encourages follow-up on referrals and recognizes the potential contribution of other agencies and districts in the child-find process.

APPENDIX B

DETERMINING CURRENT CAPABILITIES

Scoring their existing information system on the following list of statements should help managers in evaluating the system.

The current information system:

		(circle one)				
		No				Yes
1.	is used by SEA/LEA managers to make decisions	1	2	3	4	5
2.	meets most managers' information needs	1	2	3	4	5
3.	provides information necessary to fulfill federal/state information requests	1	2	3	4	5
4.	helps managers ensure that service delivery is in compliance with state/ federal laws and regulations	1	2	3	4	5
5.	is useful to data providers	1	2	3	4	5
6.	provides information for other users, such as the legislature and the public	1	2	3	4	5
7.	provides information when managers need it	1	2	3	4	5
8.	has procedures for monitoring the accuracy of information	1	2	3	4	5
9.	is trusted by managers to produce accurate information	1	2	3	4	5
10.	can be maintained without being a burden to staff	1	2	3	4	5

11.	takes full advantage of automation	1	2	3	4	5
12.	is flexible enough to produce information in response to ad hoc requests	1	2	3	4	5
13.	has the capacity to handle the necessary data	1	2	3	4	5
14.	has a short turnaround time	1	2	3	4	5

APPENDIX C

ASSESSING THE ENVIRONMENT

The following list of questions highlights some of the possible external constraints that may affect system development.

1. Do SEA/LEA managers express a need for better information?
2. Would upper level SEA or LEA managers support development of a new system?
3. Could a system be developed internally?
4. If not, are funds available for system development?
5. Is computer equipment available?
6. Is data processing staff available?
7. Are the capabilities of the computer technology unlimiting?
8. Are special education staff willing to accept a new system?
9. Are staff open to the use of computer technology?
10. Do managers have incentives or penalties at their disposal to ensure that data are accurate?

APPENDIX D

DATA ELEMENTS

This appendix presents a suggested list of data elements. Clearly, every LEA and SEA has different information needs and must create its own list of data elements. This list is meant to serve as a reference for developing such a list. Cross-referencing data elements to produce combinations of information is desirable and often essential.

Data elements should be determined primarily by managers' information needs. SEA managers should ask themselves questions such as:

- What kinds of information would help me ensure that special education service delivery is in compliance with state and federal regulations?

- What information would help to locate LEAs that need assistance with programs?

- What information do I need to support yearly budget requests to the legislature?

LEAs would provide data to SEAs in aggregate form--for each data element, data would be summarized. Data might include the items listed below. Child data:

1. students by handicapping condition
2. students served
3. students projected as needing service
4. length of time from referral to service

Personnel data:

1. instructional staff by handicapping condition
2. support staff by handicapping condition
3. projected staff needs by handicapping condition

Financial data:

1. salary costs by handicapping condition
2. other expenses
3. projected expenses

SEA managers must also have additional information to meet federal reporting requests:

1. least restrictive environment
2. in-service training received and to be received
3. facilities

SEAs should collect data using the federal categories to simplify reporting.

LEA managers should ask themselves questions like:

- What kinds of decisions do I regularly have to make about service delivery?
- What kinds of information would help me in planning for next year's programs?
- What kinds of information would assure me that all students are receiving services in compliance with the law?
- How much do services for different handicapping conditions cost?

Data at the LEA level should be child-based so that information is available for each child. Data might include:

1. demographic/identifying information--name, age, sex, racial/ethnic group, school, family information
2. handicapping condition(s)
3. special education services received--teacher(s)
4. test results
5. enrollment
6. school performance, courses taken, progress test scores
7. transportation
8. support services required

LEA managers might also want student data for preservices, such as screening, in order to track and make projections of children needing services. Preservice information might cover:

1. date of referral
2. date of evaluation
3. evaluation results
4. services needed by child

LEA managers also need personnel data. For each special education teacher, data would include:

1. demographic data--name, age, sex, etc.
2. certification
3. classes taught

Financial data is necessary for cost control and planning. LEA managers should consider at least five types of information:

1. salaries
2. benefits
3. purchased services
4. supplies and materials
5. capital outlay

To keep track of the costs of different service delivery programs, expenses should be broken out by program type and for support services. LEA managers should use state report forms in developing data elements. Data must also be collected to meet state requests for information.

Each SEA and LEA will have somewhat different data needs. When determining those needs, managers should consider all of the categories mentioned here. Not every LEA, for instance, may want to track costs of purchased services. However, every LEA should consider the financial data that it does need.